SAFETY PRACTICE IN ADDIS ABABA HIGH RISE BUILDING CONSTRUCTION PROJECTS: A COMPARATIVE STUDY BETWEEN DOMESTIC AND FOREIGN CONTRACTORS.

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By

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Declaration

I the under signed hereby declare that this thesis entitled **"Safety Practice in Addis Ababa High Rise Building Construction Projects: A comparative Study between Domestic and foreign contractors."** was composed by myself, with the guidance of my advisor, the work contained herein is my own except where explicitly stated otherwise in the text, and that this work has not been submitted, in whole or in part, for any other degree or processional qualification and that all sources of materials used for the thesis have been duly acknowledged.

Girma Geremew _____ _____

Student Name Signature Date

This is to certify that the above declaration made by the candidate is correct to the best of my knowledge.

Tilahun Goshu (Phd) _____ _____

Supervisor Name Signature Date

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This is to certify that the thesis prepared by Mr. Girma Geremew Belay entitled **"Safety Practice in Addis Ababa High Rise Building Construction Projects: A comparative Study between Domestic and foreign contractors."** and submitted in fulfillment of the requirement for the degree of master of business administration complies with the regulation of the university and meets the accepted standards with respect to originality and quality.

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ACRONYM

AACEPRA- Addis Ababa City Fire, Emergency Prevention and Rescue Agency's

BC- Building Contractor

CIDB- Construction Industry Development Board

EBCS-14- Ethiopian Building Code Standards part 14

ENR- Engineering News Report

FDRE- Federal democratic republic of Ethiopia

GC- General Contractor

GoE- Government of Ethiopia

GTP- Growth and Transformation Plan

ILO- International Labor Organization

JICOSH- Japan International Center for Occupational Safety and Health

JISHA-Japan Industrial Safety and Health Association

MDGs - Millennium Development Goals

MOLSA- Ministry of Labor and Social Affairs

OSH -Occupational safety and health

OSHA – Occupational safety and health Administration

RC- Road Contractor

S&H - Safety and Health

SWC Safety Work Cycle

WHO- World Health Organization

ABSTRACT

It is difficult to answer the question about the similarities and differences and to see the real landscape of high rise building construction safety practices of projects managed by foreign and domestic contractors based on the past studies conducted because the studies encompassed domestic contractors only even if foreign contractors are highly participated in the sector. Besides no single comparative studies of safety practice between foreign and domestic managed projects have been done and also separately foreign managed projects are not studied. Thus this study was conducted to make a comparative evaluation of high rise building the safety practice between domestic and foreign contractor's in Addis Ababa High rise building construction projects. In pursuing this objective, using purposive sampling projects are selected and multiple instruments interviews, questionnaire and observation were used to collect the primary data. Accordingly, the data's are analyzed qualitatively and quantitatively for content and from the findings it was concluded that here exist differences on safety practice, both contractors are not exercising safety practice accordingly the study reveals the challenges that exist in exercising safety practice. Finally, it is recommended that both foreign and domestic contractors need to exercise accordingly and domestic contractors need to adapt using of wall protection, safety nets, and soil protection methods during construction and the rules and the regulations, standards need to know and be accepted by all stake holders in the construction sector.

Key words: Foreign contractor, Domestic contractor, High rise building, Construction, Safety practice, Challenges

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CHAPTER ONE

INTRODUCTION

1.1 Research Background

The construction industry is a fundamental economic sector which permeates most of the other sectors as it transforms various resources into constructed physical economic and social infrastructure necessary for socio-economic development. It embracesthe process by which the physical infrastructure are planned, designed, procured, constructed or produced, altered, repaired, maintained, and demolished.The construction industry is a sector of the economy that transforms various resources into constructed physical economic and social infrastructure necessary for socio-economic development. It embraces the process by which the said physical infrastructure are planned, designed, procured, constructed or produced, altered,repaired, maintained, and demolished. The constructed infrastructures include, bbuildings transportation systems and facilities which are airports, harbours, highways, subways, bridges, railroads, transit systems, pipelines and transmission and power lines. Fluid containing, control and distribution structuresfor, such as water treatment and distribution, sewage-collection and treatment distribution systems, sedimentation lagoons, dams, and irrigation andcanal systems. And also underground structures, such as tunnels and mines.The industry comprises of organizations and persons who include companies, firms and individuals working as consultants, main contractors and sub-contractors, material and component producers, plant and equipment suppliers, builders and merchants.

Nowadays, Ethiopia is increasingly portrayed as an 'East African miracle under construction' (African Economic Outlook 2015). According to the 28th of Mar 2018 Ethiopian herald news referring the World Economic Forum 2016 report indicated that globally, the construction industry hugely influences the economy, the environment and the society… the sector is account for about six percent of the world gross domestic product(GDP). The sector's contribution is greater in the case of developing countries including Ethiopia and the industry has been playing a crucial role in sustaining country's rapid and equitable socio-economic development and changing the livelihood of millions of peoples. Information obtained from Ministry of Construction indicated that the sector had a 9.5 percent share from Ethiopia's total Gross Domestic Product (GDP) in 2016. As compared to the post, the current decade is observing huge infrastructure development in Ethiopia. The Ethiopian capital Addis Ababa, a city of more than 4 million residents, is teeming with construction activities … The city saw construction ofhigh rise buildings over the past three years, and currently more than 5,000 builders have permits to do construction, according to Construction Ministry data. However, this growth is not all a blessing. Safety rules are not followed at the rising number of construction sites, resulting in many injuries and deaths. During the 7th Ethiopian construction investment forum kicked off here in Addis Ababa Ethiopian construction project management institute has confirmed over 900 people have lost their lives due to lack of proper safety procedures during this fiscal year alone.According to Sep 6, 2017 Addis Standardnews "Fire at Biggest Stadium Construction Site in Ethiopia Kills Seven, Severely Injures about A Dozen – News Kept Secret"…Meanwhile, as the city is teeming with construction sites, failure to follow appropriate safety codes is cause for an increasing number of accidents

at such sites, high-rise buildings, roads, railways … but it all comes at a cost, a human cost and the cause of it all is a lack of safety practice that need to be normally applied in the process.Similar to the case with other developing countries, the Ethiopian construction industry shares many of the problems and challenges the industry is facing in other developing countries, perhaps with greater severity. Given the critical role the construction industry plays in Ethiopia and other developing countries, and the poor level of performance of the industry in those countries, improving the performance of the industry ought to be a priority action. As contractors are one of the key players in the industry and the makers of the final product, any development and improvement initiatives in the industry has to consider ways of improving the capacity and capability of the contractors.

> According to "Seifedin, (2014) Ethiopia is currently enjoying a relatively strong growth in construction activities. The country's booming construction sector is attracting thousands of labourers (PlusNews, 2010). Unfortunately, Ethiopia's construction industry suffers from poor safety and health conditions, even though; the constitution (1995) article 42/2 declared rights of labours to work in a healthy and safe work environment. The framework of the existing occupational safety and health conditions is fragmented and inadequately enforced, making construction sites more hazardous. He also discussed that the nature of construction project itself has potential hazards of accidents since its uniqueness, open space, exposure to weather, involving many unskilled labors, tight schedule of short targeted project duration, workers turn over and working at height, confined space and psychologically and physically vulnerably working

environment for many workers and their families and friends, involvement in the construction industry leads to the unimaginable pain and suffering associated with an accidental death or serious injury."

Safety of workers on construction site must be of paramount importance to any construction company that wants to continue to operate. Though much improvement in construction safety has been achieved in the developed countries, the industry still continues to lag behind in most other industries with regard to safety. In developing countries, safety rules usually do not exist; if any exist, the regulatory authority is usually very weak in implementing such rules effectively. Furthermore, work hazards at the construction workplace are either not perceived at all, or perceived to be less dangerous than what they actually are (Ali and Hussain, 2006).The construction industry continues to kill and maim more of its workers each year than almost any other industry.(Lingard and Rowlinsonorganizational health and safety in construction management page 112). The construction industry being a significant factor for the development of the whole economy of a nation and encompasses significant portion of the labor force, its safe operation will be of paramount importance. Safety in the construction industry has always been a major issue. Construction historically has been the most hazardous industry as measured by number of fatalities.

1.2 Statement of the Problem

It is a known fact that certain sectors and occupations are more dangerous than others. Protecting workers in hazardous conditions – in what is often known as the "3D", dirty, difficult and dangerous, jobs – is therefore a primary focus of the SafeWork Programme.(http://www.ilo.org/lbadmin/areas/wcms-doc-lab-are-ins- en-/lang--en/index.htm)

Occupational deaths and injuries and work-related diseases take a particularly heavy toll in developing countries, where large numbers of workers are concentrated in the primary and extractive activities mentioned above. It often happens that these countries are also those without adequate technical and economic capacities to maintain effective national occupational safety and health OSH systems, particularly regulatory and enforcement mechanisms. (http://www.ilo.org/safework/info/instr/lang--en/index.htm)

According to International labor Organization (ILO ,2010) approximately one in six fatal accidents reported globally takes place in the construction sector, amounting to 60,000 fatal accidents per year. The intrinsically hazardous nature of the work, multiple locations of construction sites, changing work environments and high rates of staff turnover make construction a dangerous industry. The management of safety and health is challenging according to geographical location, due to variations in technology, climate, culture, values and languages spoken. Ethiopia's rapid economic growth has fueled a recent wave of construction in Addis Ababa and elsewhere in the country.However, ensuring safety practice on construction sites remains a major challenge.

> "Seifedin (2014) discussed that in all over Ethiopia, millions of daily laborers work in big constructions in unsafe working environment and without supportive and protective equipment. They do not have protective caps, hand gloves, eye glasses, working clothes, shoes and so on. They work on high rise buildings standing on old and inclined wooden scaffolds and ladders; they even transport heavy construction materials on them. Moreover, the constructions do not have safety nets, restraint and fall arrest systems. As a result, a dozen of daily labourers get different serious injuries. Many, in fact, lose their life."

In Ethiopia, some work has been done on occupational health and safety aspects of building construction workers. However,these previous studies that have been conducted encompassed only the local contractors with different categories and classes which is quite ambiguous generalization in addition to this without showing the safety practices of foreign contractors it is difficult to conclude on the real landscape of safety issue that existedin the construction sector. Since foreign contractors are highly participated in the sector it is necessary to study the safety practice separately and in comparison between foreign and domestic managed projects. Thus, the previous studies might give limited information on thesafety issues of the sector however; it is difficult to answer the question about the similarities and differences of safety practices of high rise building construction projects managed by foreign and domestic contractors based on the past studies conducted. Besides no single comparative safety practicestudies have been done. Therefore, this research aimed at revealing the existing building construction safety practices at project level by comparing between local and foreign contractor managed projects which are high rise buildings projectsand are currently under construction in

Addis Ababa Ethiopia and finding the challenges exist, and how safety is being exercised in both foreign managed and projects managed by domestic contractors In this regard, addressing shortcomings in the construction safety practice and to avert the problem researches initiatives would have a significant importance.

1.3 Research Question

- Is there a difference on exercising safety practice in high rise building construction projects which are managed by domestic and foreign contractors?
- How safety practice is exercised by domestic and foreign contractors in high rise building construction?
- What are the challenges of safety practice that exist in high rise building construction projects managed by domestic and foreign contractors?
- What are the best experiences of safety practice that are exercised by domestic and foreign contractors in high rise building construction**?**

1.4 Objective of the Study

1.4.1General Objective

The main objective of the study is to compare the safety practice of domestic and foreign contractor managed high rise buildingsconstruction projects which are under construction in Addis Ababa Ethiopia.

1.4.2 Specific Objectives

The specific objectives of the study are:

- To investigate whether there exist a difference between domestic and foreign contractors in exercising building construction safety practice or not on their projects.

- To identify how domestic and foreign contractors are exercising safety practice in Addis Ababa high rise building construction projects.

- To identify the barriers or challenges of exercisingsafety practice in high rise building construction projects in Addis Ababa.

- To indicate the best practice ofhigh rise building construction safety practice of domestic and foreign contractors managed projects.

1.5 Scope of the Study

This research is intended to compare the safety practices of domestic and foreign contractors in the building construction sectorof Ethiopia specifically in Addis Ababa. This is done by conducting observation at project site and responses to the questionnaire distributed regarding high rise buildingconstruction safety practice fromtheemployees of foreign and domestic construction companies and consultants who are currently constructing high rise building projects in Addis Ababa. It is based on opinion of engineers and foremen working in the selected companies. Due to shortage of time and other constraints it was not possible to study this topic from different perspectives (e.g. company owners, top management, clients, and laborers)The study encompasses only grade one general contractors (GC-1)of domestic and foreigncontractor's currently working high rise building construction in Addis Ababa. This category and class limitation is in order to decrease the number ofuncontrolled variables that would affect

the outcomes of the research. The main reason for the exclusion of road contractors (RC) is that the problems with road construction in the country are much wider and fundamentally different from those ofbuilding construction, that it was deemed too wide for the scope of this research thesis. Whereas the reason for the exclusion of building contractors (BC) is that there is a significant gap between those general and building contractors,general contractors (GC)have better organizational, humanand financial capability than contractors as compared to the building contractors in addition to this since the study iscomparative evaluation thus considering contractors of the same grade, class and category in the research is considered because, it was thought that this will not create any difficulty in generalizing the research result.

1.6 Limitations of the study

The issue of construction safety practice is vast. It requires studies that are more intensive than what is presented. Thus the study only focuses on the building construction safety practice in the implementation (construction) phase only and the study exclude road, water-related and the like projects because of these projects have a lot of stake holders with a lot of variable factors. Following the time limitation, obtaining specific secondary data's from concerned governmental offices was one of the main challenges faced.Most-of the governmental offices badly cooperate to disclose any information regarding the issue raised. The secondary data's which is expected to be obtainedfrom these offices were to contribute a significant amount of deal in the findings of the research and which may even change the result of the research.Although the effort is fruitless the research is completed having a limitation of finding specific supporting secondary dataas a finger print on it.The reluctance of some of the stakeholder to give information during interview

and desk study, unavailability of written literatures in Ethiopian context, the revision of the time schedule by the university and finance for preparing this thesis have also great bearing in limiting the scope of the study in addition to this the study faces some unforeseen limitations. Even though the thesis has its own limitation, it is believed that such indicative approach on the study of construction safety practice in building construction projects will contribute to identify the relationship that exist between domestic and foreign contractors in the area construction safety practice.

1.7 Significance of the study

The main objective of the study is to assess the building construction safety practice in selected high rise building construction projects in Addis Ababa Ethiopia, through comparative analysis between domestic and foreign contractors. Therefore, the findings of this study are expected to indicate the building construction safety practice among domestic and foreign contractor managed projects. In developing countries like Ethiopia almost all the existing limited studies focus on industries other than construction concerning safety issue. Hence; the study contributes towards the enhancement of the implementation of building construction safety practice. Therefore, the findings of this study may be utilized by the government authorities to formulate policies compelling technology transfer regarding safety practice, when foreign contractors operate in their countries to promote the development of their own national champions and regulations regarding construction safety practice issues. In addition to the government, individuals and all other stakeholders in the construction sector will benefit from this study.

1.8 Organization of the Study

The final written report has a set structure consisting of five chapters.

Chapter 1: Introduction to the research and includes eight sections that present the background, statement of problem, research questions, objectives, scope,limitations, significance,and organization of the study.

Chapter 2: Covers literature review,

Chapter3: Methodology which includes; research approach, research design, data collection and data analysis

Chapter 4: Focuses on results of the analysis and discussions

Chapter 5: Conclusions and Recommendation

CHAPTER TWO

LITRATURE REVIEW

The main aim in carrying out the literature reviews is to gather information on the research topic, to provide sufficient understanding of the subject, to identify previous and recent research materials and to find gaps in these research areas and recommendations for future research in construction safety practice.

2.1 Safety and Safety Practice

Safety: is the condition of being protected from or unlikely to cause danger, risk or injury. It is a state of being safe, a condition protected against physical, social, spiritual, financial, political, emotional, occupational, psychological, educational or other types or consequences of failure, damage, error, accidents, harm or any other event which could be considered non-desirable.Safety practiceinvolves the recognition (and sometimes anticipation), evaluation, and control (engineering or administrative) of hazards and risk and management of these activities.

The International Labour Organization have been providing different packages regarding safety through International Programme for the Improvement of Working Conditions and Environment (PIACT).It was launched by the International Labour Organization in1976PIACT makes use of and coordinates the traditional means of ILO action, including: – the preparation and revision of international labour standards;…. The following is the outcome of (PIACT) and taken as it is in the training manual for review

"According to (ILO, 1995) the improvement of safety, health and working conditions depends ultimately upon people working together, whether governments, employers or workers. Safety management involves the functions of planning, identifying problem areas, coordinating, controlling and directing the safety activities at the work site, all aimed at the prevention of accidents andill health."

2.2 Site Safety Management

According to(ILO, 1995)Safety management involves the functions of planning, identifying problem areas, coordinating, controlling and directing the safety activities at the work site, all aimed at the prevention of accidents and ill health. Accident prevention is often misunderstood, for most people believe wrongly that the word "accident" is synonymous with "injury". This assumes that no accident is of importance unless it results in an injury. Construction managers are obviously concerned with injuries to the workers, but their prime concern should be with the dangerous conditions that produced the injury – with the "incident" rather than the "injury". On a construction site there are many more "incidents" than injuries. A dangerous act can be performed hundreds of times before it results in an injury, and it is to eliminate these potential dangers that managers' efforts must be directed. They cannot afford to wait for human or material damage before doing anything.

So, safety management means applying safety measures before accidents happen. Effective safety management has three main objectives:

- to make the job safe; and
- to make workers safety conscious
- to make the environment safe;

2.2.1 Safety Policies

"According to (ILO, 1995) safe and healthy working conditions do not happen by chance. Employers (contractors) need to have a written safety policy for their enterprise setting out the safety and health standards which it is their objective to achieve. The policy should name the senior executive who is responsible for seeing that the standards are achieved, and who has authority to allocate responsibilities to management and supervisors at all levels and to see they are carried out.

The safety policy should deal with the following matters:

- Arrangements for training at all levels. In particular, attention needs to be given to key workers such as scaffold workers and crane operators whose mistakes can be especially dangerous to other workers;
- Safe methods or systems of work for hazardous operations: the workers carrying out these operations should be involved in their preparation;
- The duties and responsibilities of supervisors and key workers;
- Arrangements by which information on safety and health is to be made known;

- Arrangements for setting up safety committees;
- The selection and control of subcontractors."

2.2.2Safety Organization

"According to (ILO, 1995) the organization of safety on the construction site will be determined by the size of the work site, the system of employment and the way in which the project is being organized. Safety and health records should be kept to facilitate the identification and resolution of safety and health problems on the site.

In construction projects where subcontractors are used, the contract should set out the responsibilities, duties and safety measures that are expected of the subcontractor's workforce. These measures may include the provision and use of specific safety equipment, methods of carrying out specific tasks safely, and the inspection and appropriate use of tools. The person in charge of the site should also assure that materials, equipment and tools brought on to the site meet minimum safety standards.

Training should be conducted at all levels, including managers, supervisors and workers. Subcontractors and their workers may also need to be trained in site safety procedures, because teams of specialist workers may mutually affect each other's safety. There should also be a system so that site management has information quickly about unsafe practices and defective equipment.

Safety and health duties should be specifically assigned to certain persons. Some examples of duties which should be listed are:

- Provision, construction and maintenance of safety facilities such as access roadways, pedestrian routes, barricades and overhead protection;
- Construction and installation of safety signs;
- Safety provisions peculiar to each trade;
- Testing of lifting machinery such as cranes and goods hoists, and lifting gear such as ropes and shackles;
- Inspection and rectification of access facilities such as scaffolds and ladders;
- Inspection and cleaning of welfare facilities such as toilet, clothing accommodation and canteens;
- Transmission of the relevant parts of the safety plan to each work group;
- Emergency and evacuation plans."

2.3. Summary of Safety duties Imposed on Various Persons and Companies

"According to (ILO, 1995) the duties imposed on persons and companies are:-

a) The Client

The clients should put safety and health on the top priority along with the financial considerations. To ensure that all contracts are completed on time, on budget and safely, clients should:

- Ensure that health and safety are not compromised
- Ensure the best value against the lowest cost
- Put in place safety and health considerations during the design stage
- Allow sufficient time and resources for implementing the contractor's safety program

b) The contractors

In the same manner, the contractors should also:

- Plan emergency routes and exits, traffic routes, danger areas, loading bays, ramps, etc.
- Ensure provision of safe work equipment, with due care to their suitability, selection, safety features, safe use, training and information, inspection and maintenance
- Provide safe working slope of excavators
- Design and anchor fork-lift trucks and dump trucks to prevent roll over or overturning
- Keep the workplace free from hazards

- Provide suitable communication and information – to let employees know how to protect themselves against hazards
- Conduct regular jobsite safety inspections
- Employ trained first-aid personnel on site and/or put in place an emergency response system

C) The employees/workers

Every worker is under a moral, and often also a legal, duty to take the maximum care for his or her own safety and that of fellow workers. There are various ways of involving workers directly in site conditions, such as:

- "Tool-box briefing", a five- to ten-minute session with the supervisor just prior to starting a task gives the workers and the supervisor a chance to talk about safety problems likely to be encountered and potential solutions to those problems. This activity is simple to implement and it may prevent a serious accident;
- "Safety check"; a check by workers that the environment is safe before starting an operation may allow them to take remedial action to correct an unsafe situation that could later endanger them or another worker.

More so, the employees/workers should:

- Follow all safety rules

- Ensure that all safety features and equipment's installed are functioning properly
- Replace damaged or dull hand tools immediately
- Avoid horseplay or other activities that create a hazard
- Stop the work when they are unwell or physically not fit to do the job
- Report any unsafe work practice and any injury or accident to the line supervisor

d) Senior Site Management

The duties of the senior site management include:

- Inform workers of the risks present and the control measures required
- Evaluate risks that cannot be avoided
- Combat risks at source
- Establish emergency procedures
- Avoid all risks to workers
- Ensure that appropriate training is given

e) The architects, structural engineers and other designers

Architects, structural engineers and other designers should:

- Discuss and agree the safety and health terms with the client

- Plan for safety and health in layout and design drawings, with due regard of build ability, future maintenance and repairs
- Provide information about the safety and health risk of the design after the client has decided on which contractor(s) to use
- Carry out periodic checks and sort out interface problems with different contractors
- Certify contractor's claims for safety payment and conclude the final accounts

f) Safety professionals and supervisors

Safety professionals and supervisors should:

- Identify hazards in the workplace
- Give advice and suggest options for solving safety or health problems
- Suggest different kinds of help available, such as specialists in chemical, electrical and mechanical engineering safety to sort out issue at stake
- Investigate accidents/incidents and recommend remedial measures
- Carry out periodic checks and provide a written report summarizing the findings
- Develop and maintain an effective safety and health program
- Provide safety training for employees

h) Safety officer/manager

Every construction company of any size should appoint a properly qualified person (or persons) whose special and main responsibility is the promotion of safety and health. Whoever is appointed should have direct access to an executive director of the company. His or her duties should include:

- The organization of information to be passed from management to workers, including those of subcontractors;
- The organization and conduct of safety training programmes, including induction training for all workers on the site;
- The investigation and review of the circumstances and causes of accidents and occupational diseases so as to advise on preventive measures;
- Acting as consultant and technical adviser to the safety committee;
- Participation in pre-site planning.

To carry out these functions the safety officer should have experience of the industry and should be properly trained and qualified and, where such exists, should be a member of a recognized professional safety and health body.

i) Supervisors

Good planning and organization at each work site and the assignment of clear responsibility to supervisors are fundamental to safety in construction. “Supervisor” here means the first level of supervision, which on site is variously termed as “foreman”, “charge hand”, “ganger”, and so on.

Each supervisor requires the direct support of site management and should seek to assure within his or her field of competence that:

- working conditions and equipment are safe;
- workplace safety is regularly inspected;
- workers have been adequately trained for the job they are expected to do;
- workplace safety measures are implemented;
- the best solutions are adopted using available resources and skills;
- necessary personal protective equipment is available and used

Making the work site safe will require regular inspection and provision of the means for taking remedial measures. The training of workers enables them to recognize the risks involved and how they can overcome them. Workers should be shown the safe way of getting a job done.

j) Safety Committees

An active safety committee is a great spur to safety. Its primary purpose is to enable management and workers to work together to monitor the site safety plan so as to prevent accidents and improve working conditions on site. Its size and membership will depend on the size and nature of the site and upon differing legal and social conditions in the countries concerned, but it should always be an action-oriented group of people in which both management and workers are represented. The safety committee carrying out a site inspection together raises the level of safety consciousness at the site.

The duties carried out by an active safety committee will include:

- Regular and frequent meetings to discuss the safety and health program on site and to make recommendations to management;
- Consideration of reports of safety personnel;
- Discussion of accident and illness reports in order to make recommendations for prevention;
- Evaluating improvements made;
- Examination of suggestions made by workers, particularly by safety representatives;
- Planning and taking part in educational and training programs, and information sessions

k) Safety Representatives

These are appointed by workers, sometimes in accordance with national legislation, to represent them in dealing with safety and health matters on site. They should be experienced workers well able to recognize construction site hazards, although they are likely to require training to acquire new skills in inspection and in using information. Their functions are:

- To make representations to the management about matters of concern regarding the safety and health of workers;
- To attend meetings of the safety committee;
- To carry out regular and systematic inspections on site;
- To investigate accidents in conjunction with management to determine their causes and to propose remedies;
- To investigate complaints by workmates;
- To represent workers in discussions with government inspectors at their site visits.

Safety representatives should be given sufficient time off to be trained and to carry out their duties properly. These activities should be without loss of pay, for a safe and healthy site benefits both employers and workers.

l) Outside Agencies

Government Intervention

In many countries there are laws and regulations governing conditions of work in the construction industry. These are usually enforced by factory or labour inspectors who are often also able and willing toprovide advice on compliance. However, even in the best-regulated countries the numbers of inspectors are too few to provide day-to-day surveillance on site, even where it is their job to do so.

m) International Agreements

National laws and regulations are often based upon international conventions, agreements, declarations and programs. These have been drawn up by different United Nations organizations including the International Labor Organization (ILO) and the World Health Organization (WHO). In 1988 the ILO adopted the Safety and Health in Construction Convention (No.167), and its accompanying Recommendation (No.175), which provide a foundation of law on which safe and healthy working conditions can be built." (ILO, Safety, health and welfare on construction sites: A training manual Geneva,International Labour Office, 1995 page 3- 8)

2.4 Why Manage Health and Safety?

Accidents and ill health are costly to workers and their families. They can also hurt companies because, in addition to the costs of personal injuries, they may incur far greater costs from damage to property or equipment and lost production.To avoid

overlooking important health and safety issues, employers need to adopt a systematic approach to managing health and safety. This can be done by establishing a program in which health and safety is an integral part of management – from top level managers to supervisors.

Recommended elements for an effective health and safety management program include:

- Involvement and commitment of top level management

Managers need to understand their responsibilities under health and safety legislation and be aware of the hazards specific to their organization. Management must be committed to and held accountable for providing a healthy and safe workplace.

- Supervisors' responsibilities and authority: Ensuring the health and safety of employees under their supervision

The responsibility for the health and safety of employees under their supervision should be promoted as an integral part of a supervisor's job. To ensure the health and safety of employees, supervisors need to be aware of their responsibilities and will require adequate information, training and resources. Supervisors need the authority to take action to protect health and safety. Managers need to ensure that supervisors are accountable.

- Prepare health and safety policies and procedures

A policy should detail the arrangements for protecting employees' health and safety and outline the responsibilities of management and employees. It must be supported by written procedures so that everyone in the organization is aware of their responsibilities.

- Establish effective mechanisms for employee consultation

Consultation between employers, employees and their elected representatives on all aspects of health and safety in the workplace such as identifying, assessing and controlling hazards, injury and incident investigation, and the development of health and safety policies and procedures, is essential. Consultation encourages employees to participate, contribute ideas and assist with solving problems.

- Putting in place arrangements for the identification of hazards, and the assessment and control of risks to health and safety in the workplace

Regular workplace inspections must be conducted to identify problem areas and hazards. Injury, accident and disease records need to be examined and employees consulted to identify problems.

- Providing a safe system of work

A safe system of work is the total set of methods adopted for carrying out the operations required in a particular workplace. They cover all aspects of the employment situation including the organization of work processes, the methods of using machinery, plant and equipment, the methods of hiring labor, job training, instruction and supervision about associated hazards and their management and what to do when things go wrong.

- Providing training to enable management and employees to carry out their responsibilities

Managers, supervisors and employees all need information and training to ensure they are aware of their responsibilities and understand the arrangements in place to protect occupational health and safety.

- Keeping records of action taken to manage health and safety in the workplace

The health and safety legislation require that some records are kept. In general, it is good management to be able to show what action has been taken to protect health and safety.

2.5 Site Safety Cycle

The "Site Safety Cycle" arrangement is modelled on the Japanese practice of "Safety Work Cycle" which encourages active participation of, and communication among, site staff at all levels with a view to promoting safety and tidiness of construction sites.

It is done through a so-called '5-S' system. The term "5-S" comes from a formal system created by the Japanese and adapted by many companies in Hong Kong. The 5 steps in Japanese are *Seiri, Seiton, Seison, Seiketsu*and *Shitsuke*. It is a set of principles and methodology of organization and standardization that goes well beyond normal housekeeping programmes, and sets the foundation for keeping and improving the work environment.

What '5-S' means (directly translated from Japanese) is:

- ✓ Organization (Seiri)
- ✓ Neatness (Seiton)
- ✓ Cleaning (Seiso)

- ✓ Standardization (Seiketsu)
- ✓ Discipline (Shitshke)

With years of practice, The Japan International Center for Occupational Safety and Health (JICOSH), which was established in July 1999 by the Ministry of Health, Labor and, Welfare together with the Japan Industrial Safety and Health Association (JISHA), still adopt the Safety Work Cycle (SWC) to promote construction safety cycle activities. All parties concerned, in particular the contractors, accepted its importance and usefulness in assigning responsibilities for their operation by reminding workers of the value of exercise and preparedness of risks at the beginning of each shift in the worksite.

The JISHA general guidelines for construction site safety management by Master Employer (1995) set out the implementation of such safety and health arrangements before the start of work. Under this arrangement, the related subcontractors are required to assemble their employees before the start of work every day and make safety and health arrangements concerning the following matter:

- ➢ Providing instructions to related workers concerning the work contents, working procedures, points concerning industrial accident prevention, etc., for the day.
- ➢ Announcing the results of liaison and coordination arrangements between work assignments.
- ➢ Understanding the views and opinions of related workers in the prevention of industrial accidents.
- ➢ Safety activities such as hazard prediction activities.

2.6 Health and Safety International Practice

Considering the importance of health and safety of construction workers in the industry, different countries have designed their own norms, which fit their specific objectives. The International Labor Organization (ILO) provides specific guidelines on health and safety in construction activities. The general objectives of health and safety norms/codes in any country construction industry can be summarized as:

- To help prevent accidents and harmful effects on the health of those employed in construction industry.
- To provide guidelines in the appropriate deign, selection, installation and safe operation of equipment, and process related to civil engineering work.
- To provide guidance in establishing administrative, legal and educational frameworks within which preventive and remedial measures can be implemented.

2.7 Health and Safety in the Construction Industry Around the World

" Rizwan, (2015)discussed that here is much variation in occupational structures, working conditions, environment and the health status of workers in different parts of the world, in different countries and in different areas of the economy. Therefore, the structure of construction industry is not consistent throughout the world. Nowadays construction industry plays a key role in expanding the economy of any country, especially a developing country. It supplies the infrastructure required for other sectors of the economy to thrive. Many studies have indicated that construction industry brings a level of economic development

in the country. The construction industry everywhere faces difficulties and challenges. Nevertheless, in developing countries, these issues and challenges are present together with a general level of socio-economicstress and a reduced productivity rate when compared to developed countries.''

Another study by " Tente, (2016) discussed that construction plays a part in many economic sectors (ILO Construction OS & H), as the industry contributes more than a tenth of the global GDP and it is believed to employ over 7per cent of the world's entire workforce (Kayumba, 2013). However, construction is internationally recognized as the most dangerous industry in which to work (Lingard and Rowlinson,2005). This is supported by the fact that there are around 340 million occupational accidents and 160 million victims of work-related illnesses annually worldwide (Neale, 2013). For instance, in Asia; China and Japan recorded significant levels of injuries and fatalities in the construction industry (Chan et al., 2004). In Thailand, the industry faced high accident and injury rate at the project level. Furthermore, in 2003 Thailand's construction industry accounted for 14 per cent of the total number of 787 deaths at work and 24 per cent of the total seventeen cases of permanent disability (Aksorn and Hadikusumo, 2007). Despite the industry not recording the highest in accident statistics in Malaysia, a worrying increase in the number of accidents was recorded (Abdullah and Wern, 2011).

In South Africa, it has been noted that construction sites continue to be among the most dangerous workplaces in the economy. This is despite the government's initiatives to improve safety and quality performance. According to the

ConstructionIndustry Development Board (CIDB, 2004) the construction industry was ranked third after mining and transportation, having recorded seventy-four deaths on sites in 2003. Approximately 160 deaths occurred on construction sites in 2007 and 2008 (CIDB, 2008). In addition, the Department of Labour produced a report in 2012 which indicated that in the period of 2007 to 2010, the construction industry incurred 171 fatalities and 755 injuries.

Regardless of having the necessary legislation in place, construction Safety and Health (S&H) is a major issue in developing countries (Chiocha*et al*., 2011). Research further suggests that in Botswana, construction S&H awareness is low (Musonda and Smallwood, 2008) to the effect that the industry recorded a fatality rate of 0.26 per 1,000 workers which was the highest of all industries (Tau and Seoke, 2013). Similarly, according to Chiocha et al.(2011), S&H records in the Malawian construction industry are virtually non-existent and studies emanating from countries sharing similar characteristics with Malawi in the region provide a pointer to what may be occurring in the Malawi. Meanwhile the Tanzaniangovernment has established OSHA, yet occupational safety andhealth records are still a problem and a majority of workers in several economic sectors are affected (National Audit Office, 2013). The construction operators do not give priority to the safety and health of workers despite workers being important drivers of the sector which contributes to the national economy (Matiko, 2013). Moreover, deaths, permanent disabilities, and severe injuries have been on the increase for building workers through major accidents and poor working conditions in the country (Phoya, 2012)."

2.8Challenges of Safety Practice in Developing CountriesConstruction Industry

The construction industry is an important part of the economy in many countries and is often seen as a driver of economic growth especially in developing countries. Owing to its relatively labour intensive nature, construction works provide opportunities for employment for a wide range of people skilled, semi-skilled and unskilled. Despite its importance, construction industries are considered risky with frequent and high accidents rates and illhealth problems to workers, practitioners and end users.

> According to Al Hajeri (2011) " There is a wide variation in economic structures, occupational structures, working conditions, work environment, and the health status of workers in different regions of the world, in different countries and in different sectors of the economy. Therefore the mechanisation of the construction industryis not uniform throughout the world. However, the construction industry plays a vital role inboosting theeconomy of any country, especially a developing country. It provides the infrastructurerequired for other sectors of the economy to flourish. Many studies, such as Coble andHaupt (1999) have shownthat construction industry reflects the level of economicdevelopment within the country. The construction sector everywhere faces problems and challenges. However, in developing countries, these difficulties and challenges are present alongside a general level of socio-economic stress and a lower productivity rate when compared to developed countries (Ofori, 2000). Nevertheless it is generally believed that the construction industry is a good source of employment at various levels of skills, from a general labour to semi-skilled, skilled and specialist workforce. Othermajor areas that impact on this

sector are lack of research and development, lack of trade and safety training, client dissatisfaction, andthe continuously increasing constructioncosts (all of which result in less profitability).

Construction within developing countries often fails to meet the needs of modern competitive businesses in the marketplace and rarely provides the best value for clients and taxpayers (Datta, 2000). Additionally, this sector also demonstrates poor performance in respect of health and safety due to the absence of any stringent safety and construction laws. International labour organization (ILO, 1987) attributes the poor health and safety records in construction projects within developing countries to:

- The high proportion of small firms and the high number of self-employed workers;
- The variety and comparatively short life of construction sites;
- The high turnover of workers;
- The large proportion of seasonal and migrant workers;

Kartam et al. (1998) found that,in most developing countries, for example like India, there are no training programs for staff and workers; therefore, no orientation for new staff or workers is conducted; hazards are not pointed out; and no safety meetings are held. Employees are expected to learn from their own mistakes and experience. In adopting different approaches to health and safetyin developed and developing countries, two main differences can be identified. The

first is the existence of legislation and its effective implementation; the second is hazard awareness. In developed countries, many safety acts and legislation exist and are implemented effectively. Nominated safety officers promote hazard awareness with the help of regular safety training sessions. In developing countries, however, safety rules barely exist at all; and when they do, they are inappropriate, ineffective, out-of date and based on conditions that prevailed while thecountry was still being colonised. Additionally, the regulatory authority is usually very weak in implementing rules effectively, and work hazards are either not perceived at all, or perceived to be less dangerous than they actually are (Larcher and Sohail, 1999; Hinzeet al., 1999)."

2.9 Health and Safety Practice in Ethiopian Construction Industry

Construction industry, in general, is comparatively less organized and involves participation of major percentage of unskilled labor as compared to other industrial sectors. As a major employment generator in many parts of the world, construction is also a sector associated with a proportionately high number of job-related accidents and diseases. Despite mechanization, the industry is still largely labor -intensive, while working environments are frequently changing and involve many different parties.Rizwan, (2015) quoting from (Singh et al., 1999) in a developing countries health and safety rules hardly exist at all. The construction industry in developing countries is generally underdeveloped, dysfunctional or non-existent. Many developing countries, especially in Africa and Asia, do not have consistent national building codes and regulations. Wherever they exit they are inappropriate, out of date, ineffective, outmoded and based on conditions which prevailed while they were still being colonised. It is of

particular importance to the construction industry, where it is one of the major employers of the work force in Ethiopia. Statistics indicate that injuries and death due to construction related accidents are increasing. Most construction industry accidents in Ethiopia have not been reported and well recorded. Nevertheless, it is reported that many people lost their lives on construction sites and many more seriously injured. Not only are construction workers who suffer injuries and death but also people and children who are not employed in the industry. Besides human tragedies, accidents could substantial economic cost to the industry due to the fact it could also cause damage to plant and equipment, damage to work already completed, loss of productive work time while debris is cleared and damaged work rebuilt, increased insurance premiums, and, loss of confidence and reputation.

According to the [AACEPRA], Addis Ababa City Fire, Emergency Prevention and Rescue Agency's 2017 nine-month report, there have been 410 accidents, most of which occurred in highly-populated slum areas. 291 of the accidents were fire-related and the rest happened at or near construction sites.

According to Ethiopian construction project management institute [ECPMI, 2017] study it has been confirmed that over 900 people have lost their lives due to lack of proper safety procedures during this fiscal year alone.

> According to " Sebsbie, and Dagnachew(2016) study on occupational injuries among building construction workers in Addis Ababa, Ethiopia quoted from AH and AZ, (2009) and CPWR , 4th ed. Industrial safety and health problems are becoming major challenges in Ethiopia because of low occupational hazards

awareness, lack of workplace safety and health policy, and inefficient safety management systems. Due to these factors employers, workers and the government are incurring measurable and immeasurable costs. Injuries remain the major occupational health problem among construction employees. In this study the prevalence of injury among the employees was 38.3 % [95 % CI: (33.9, 42.7)]. This finding is in line with a study from Ethiopia Molla and others (2013), (38.7 %) and higher than that of studies from Egypt (18.4 %) Alazab RM, (2004) and India (22.9 %) Shah CK, Mehta H, (2009)."

Another study on occupational hazards in construction industry: case studies from housing and construction workers at Addis Ababa, Ethiopia indicated that Almost all workers unable to use (96.8%) because they were unable to get protective devices from the organization (93.5%) or absence of occupational health trainings (100%) This might be associated to lack of awareness, stringent commitment on the issue, or legal controlling mechanisms of construction sector even the consultants and contractors get working license or renew it without such basic requirements of occupational safety and hygiene issue in the work place. (Tolera, 2016).

"Abera, Jonathan and Kiros et.al (2014) the construction sector in Ethiopia, which includes mainly housing and road infrastructures, has been growing rapidly over the last few years. A study among a construction workforce found that workers suffered from shoulder aches, back pains, skin-related diseases, eye problems, and breathing and noise irritations. The proportions of study subjects (n=100) with musculo-skeletal disorders, skin disorders, eyeproblems, workplace accident (serious and medium), and noise irritation were 64%, 69%, 31% and 46%,

respectively. The work environment was characterized by tasks with repetitive movement of body parts, working in the open air, and the presence of dust and excess noise. Limited awareness by workersto occupational hazards, inadequate utilization of personal protective devices, and poor personal hygiene were cited as factors that are closely related to the adverse health effects discussed above RS, (2008)."

"Lucy and others, (2016) on their study titled evaluation of health and safety practice in building construction: a case study in Addis Ababa concluded the following:-

a) On the extent of health and safety practice,

The majority of the companies (56.1%) has more than (10) years of experience in the local market, which should make them familiar with safety and health regulations of the country. However, only (7.6%) respondents were from thesafety department. Not all companies have a professional safety department yet this department drives majorly for the health and safety of workers. The satisfaction level of workers towards the company expenditures on safety and health is lower which is less than 50% for all raised question such as Availability of First Aid and occupational health service on site, Availability of PPE (Safety shoe, helmet, goggles, Welding masks, Face shield, hearing protection, Respirators protection) on site, Providing Training and instruction regarding health and safety to every workers, Scaffolding and Ladders inspection at regular intervals, Guardrails, handrails and covers for opening installed wherever there is

danger of employees, preparation of Safety audit report and having checklist for safety at height, scaffolding, crane. Falling from height is the most cause of injury followed by Scaffold collapse, then Failure to use personal protective equipment, Trench collapse, struck by an object, Defective /misuse equipment and lastly Electric shock. Further, the majority of respondents agreed on the poor site supervision,which is the main reason of accident occurrence.

b) On the General duties of competent authorities in health and safety

Clients' role: Clients' role in the selection of contractors that are competent and have made proper provision for health and safety and in the selection of Consultant with necessary health and safety knowledge and experience to represent him was less applicable. In the selection of the contractor and Consultant, health and safety issues was not considered. Therefore, Clients' role in health and safety practice on assessing construction projects was poor.

Contractors' role: In providing all necessary safety tools (safety shoe, helmet, gloves, wear, belt, and glass), training for their workers, health and safety performance report per month (such as reports, audits and inspections) was not applicable. This is applicable only to few construction projects.

c) On the Factors that affect health and safety performance of labourers

From RII results non availability of a clear company health and safety policy ranks first which indicates that it is very vital to improve health and safety performance of labourers. The 2ndfactor was inadequate enforcement of the existing building rules and regulations for health and safety performance of

labourers cannot be practiced without enforcement of the existing building rules and regulations in the company. And the 3rd was safety awareness of the company's top management, which means that Safety awareness on the construction project should start from top management then down to labourers for uniform knowledge and implementation. The 4thrank which is a safety investment on Personal Protective Equipment (PPE) has its own impact on the performance of labourers. Less or no investment on PPE can affect performance of labourersand will expose them to hazards. Recording and reporting of daily safety issues (safety audit), age of worker, reward and punishment system, and the other factors should be given due consideration. This indicates that the respondents agreed that clients' role is very vital in safety problem reduction.

Consultant's role: In checking whether the contract document prepared for tender has guidelines for health and safety regulation and enables to enforce rules and regulations for health and safety problem minimization it is found to be less applicable. The Consultant cannot enable the contractor to enforce rules and regulations for health and safety stated on Occupational Safety and Health Administration (OSHA) and other governmental rules. Also cannot enforce the contractor to have a safety checklist for each activity, increase health and safety performance of labourers."

" Seifedin.,(2014) described that the construction in developing countries, like Ethiopia, is more labor intensive than that in the developed world, many of them are unskilled. Without a significant difference between large and small contractors found in Ethiopia, almost all of them do not have a safety policy. For

the majority of contractors, however, maximizing profit is the prime concern. Unsafe conditions exist on many sites, bothlarge and small, and laborers are subjected to numerous hazards. On many sites, no training programs for the staff and workers exist; therefore, no orientation for new staff or workers is conducted, hazards are not pointed out, and no safety meetings are held. Employees are required to learn from their own mistakes or experience. In addition, lack of medical facilities, shanty housing, and substandard sanitation. Workers undertake a risk while at work and the following problem areas are common:

1. While excavating in deep trenches (with no proper shoring or bracing)

2. Concreting is done mainly by laborers, and cements burns due to the unavailability of protective gloves and boots are common.

3. Workers fall from heights due to weak scaffolding and the unavailability of safety belts.

4. Workers sustain injuries on the head, fingers, eyes, feet, and face due to absence of personal protection equipment.

Condition of work of construction workers in Ethiopia is found to be poor. This is mainly due to the poor employment relationships and lack of safety measures. Safety measures are nonexistent in the construction sites; therefore, workers are exposed to different kinds of work related hazards. Most of the injured workers did not receive compensation because of triangular employment arrangements between the building contractors, sub-contractors and sub-contractors which obscure lines of liability (Limenih, 2010).

Injuries generally are unreported; however, if necessary, a laborer might receive first aid or preliminary medical care. In most cases, specialized medical treatment or compensation is unavailable. Workers themselves consider accidents as due to their own negligence, and accept that construction is a dangerous occupation. Nevertheless, major accidents involving the death of a worker may be reported due to the financial expenses and litigation that could be involved. Some informal assessments identified a few major reasons for safety non-performance which included: lackof development of construction sector in the shape of mechanization and industrialization; lack of professional construction management practices, inadequate safety provisions laid by the existing regulatory environment which has failed to establish safety as a major industry objective, insufficient and incentive-less insurance mechanisms which have failed to establish safety as a business survival issue, and unfavorable business environment which has led to adversarial business relationships among stakeholders resulting in controversies, conflicts, claims and litigation and hence diverting the focus away from issues like safety(Farooqui etal.,2007)."

"According to Biniam (2015) Shaky wooden scaffolds and ladders, unsafe excavations, daily laborers working under precarious conditions…, this is construction in Ethiopia where health and safety takes the back seat. The construction industry employs a large number of a nation's workforce and is a major driver of the economy through the contribution of a large amount to the GDP. The same industry is identified as occupational safety and health hazard since it involves several occupational risk and dangers that are specific to the

sector. Construction workers are prone to accidents running from a minor cut to fatal injuries and these risks are magnified in the Ethiopian context. With the advent of the construction boom of Ethiopia, it is not uncommon to see the majority of construction activities being carried out by unskilled labor force at a cheap daily payment. Among other things, injuries and accidents are very high due to lack of sufficient health and safety training, inadequate provision of safety equipment and lack of proper enforcement of minimum standards by the concerned authority, if at all. …

OHS has been one of the major concerns for the International Labor Organization (ILO). Ethiopia has been a member state to ILO since 1923 and ratified 22 ILO conventions including 8 fundamental conventions and 12 Technical Conventions, one of which is the Convention on Occupational Safety and Health that sets forth principles for action at the national level. It provides definitions, establishes requirements for national policy and specifies the responsibilities of governments, employers and workers. It also provides guidance for developing a well-functioning labor inspectorate. However, Ethiopia is not a signatory to the ILO convention that specifically deals with the safety and health in construction (Safety and Health in Construction Convention, 1988 (No. 167))

The Federal democratic republic of Ethiopia (FDRE) Constitution guarantees the protection of certain labor rights in general. It protects freedom of association and collective bargaining for workers (Articles 42(1) (a) and (3)) and all citizens (Article 31) and the right of women to equal pay (Article 42(1) (d)). It also states that “workers shall have the right to appropriately defined working hours, breaks,

leisure, periodic leave with pay, paid public holidays, and a safe and healthy working environment" (Article 42(2)). It further prohibits forced and compulsory labor (Article 18(3)).

The Ethiopian Labor Proclamation (Proc. No.377/2003) establishes general OSH standards and their means of enforcement. Part Seven on OSH and the Working Environment has three relatively brief chapters on preventative measures, injuries and benefits.Chapter I on Preventative Measures obligates employers to take the necessary measures to adequately safeguard the health and safety of the workers and lists particular steps to be taken by the employer. These are; taking appropriate steps to ensure that workers are properly instructed and notified concerning the hazards and precautions necessary to avoid accident and injury to health; providing workers with personal protective equipment, clothing and materials and instructing them in their use; registering employment accident and occupational diseases and notify the labor inspectorate of it; arranging, according to the nature of the work, at his own expenses for the medical examination of new workers and those engaged in hazardous work; ensuring that the workplace do not cause danger to workers health and safety; taking appropriate precautions to ensure that all work processes do not cause physical, chemical, biological, ergonomic and psychological hazards; and obeying the directives issued by the appropriate authority in accordance with the Proclamation (See Art. 92). Workers also have a certain obligation in the creation of safe working environment (See Art 93 & 94). However, despite these OSH standards, almost all construction

companies, especially the domestic ones, fail to integrate the majority of the standards and daily labors are forced to work under precarious conditions.

Another relevant legal material for OSH is the Safety, Health and Working Environment Protection Directive 2006 (OSH Directive) issued by the Ministry of Labor and Social Affairs (MOLSA). Along with a relatively detailed guidance on OSH matters, it defines and describes the general requirements of maintaining safe and healthy workplaces. Part V of the directive covers OSH in construction, thus, the sector has been dealt with separately taking account of its hazardous nature. Although the Ministry of Urban Development and Construction has prepared a draft code (EBCS,14) regarding health and safety in building construction, its adoption status remains unrealized.

One of the major problem regarding the enforcement of available OSH standards in general and in the construction sector is the lack of effective labor inspection system. The mandate for labor inspections is found in labor proclamation and OSH Directive. As per the proclamation, MOLSA has a very broad mandate and as per the OSH Directive, a strong focus on OSH. The labor proclamation provides labor inspection roles and responsibilities, the labor inspection process, penalties and remedies and court and labor board adjudications.

At the Regional level, the Bureaus of Labor and Social Affairs oversee labor inspections under the direction of regional governments. In Addis Ababa and Dire Dawa, the city governments aremandated to supervise labor inspection units. The Labor Inspectorate is authorized and directed to ensure implementation of the

Proclamation and its regulations and directives, other labor laws, registered collective agreements, and decisions and orders given by authorities. It also requires that the inspectorate conduct research on working conditions and OSH, collect statistics, provide training and prepare a list of occupational diseases and schedules or degrees of disablement. It also provides that the labor inspectors have the power to conduct on-site inspections without prior notice, question managers and workers, review documents, and take samples to test conditions. The Proclamation establishes a labor inspection process for inspectors and employers to follow.

In conclusion, although there are laws governing OSH issues in Ethiopia, there remains a gap in addressing those high risk sectors like the construction industry. However, the biggest gap lies in the enforcement of the existing standards, for one thing and another reason is there seems to be a lack of institutional commitment to enforce the rules. Unless a drastic effort is taken by all concerned organs to improve the working conditions of those engaged in the construction work, the social cost of unsafe labor practice will be high. Thus, in moving forward, building a culture of prevention must be one of the priorities to the sector."

2.10Summary of Literature Review and Gaps Identified

In the literature review the researcher tried to give a comprehensivetheoretical and empiricalview on the issue of safety and safety practice globally and nationally.

Furthermore, the researcher findings on the gaps of the previous studies are discussed as follows.

The researcher agrees with (Phoye,2012) that deaths, permanent disabilities, and injuries have been increasing in under developing countries construction sector, which is also the existed situation in Ethiopia construction sector.It is confirmed by the Ethiopian construction project management institute [ECPMI, 2017] study in addition to that the study also indicates that the issue of under reporting. When I compare the number of fatalities in the report in the study it did not match with the numbers from [AACEPRA], Addis Ababa City Fire, Emergency Prevention and Rescue Agency's report in which both of the reports are of the same physical year reports. The issue of under reporting also agrees with the study made by (Seifedin, 2014). On the other hand Seifedin's study encompassed small and large construction contractors which make the conclusion vague because of the existence of other factors between small and large construction companies due to their class and categorical difference in addition to that it is necessary to consider the geographical and weather, climate, topographical and other condition of the projects under study since the study has been conducted in Addis Ababa and Welkite; not only this the study included only local contractors since the foreign contractors are taking the lion's share in the market specially in mega projects,(Construction draft policy, 2012) the study must encompass these companies otherwise it is difficult to present the actual fact as it exists. On the other hand (Rizwan, 2015) which indicates that safety and health rules are hardly existed. Where ever they exist they are inappropriate, outdated, and ineffective, generally dysfunctional and non-existent. It is also confirmed by (Seifedin, 2014) However, this conclusion was contrary to the fact that the laws, rules, standards

and directive do exist (Biniam, 2015). The Authors of this research also agrees on the conclusion made by (Al Hajeri, 2011) it states that the issues in the construction industries of developing countries are presented with the socio - economic stress and lower productivity rate.InEthiopia there exist rules, directives and standards however, all of which have largely remain unenforced.The Ethiopian construction industry seems to have less amount of scientific literature coverage. The existed studies are conducted without category and class limitation of construction companies considered in the studies which increases the number of uncontrolled variables of the study that would affect the outcomes.The studies that have been made in the past do not encompass the foreign contractors and the studies do not consider the section of the construction sector which is very wide the author argues that considering different class of contractors with different categorical group and area of working considerably affect the outcomes of these researches. Thus, there existed no past studies which have inclusion and exclusion criteria's of for considering construction companies under study and this makes them exposed for unforeseen limitations.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

This chapter deals with design of the study, sources of data, sample population and sampling techniques, instruments of data collection, procedures of data collection, and data analysis.

3.1. Design of the Study

A descriptive, institutional based cross-sectional survey design was used

3.2. Data Sources

To undertake this research, the researcher used both primary and secondary sources of data. In order to realize the target, the study used well-designed questionnaire as best instrument. This was completed by the employees of the contractors and consultant professionals in addition to its site observation check list used. Secondary data were collected from published and unpublished reports were referred to.

3.3 Study Population and Sample size determination

The target population for this study is foreign and domestic grade one contractor who are currently constructing high rise building with in the past two years. The total populations are 30 projects out of which 6 foreign contractors and 24 domestic contractors. Generally, using purposive sampling method 4 foreign managed projects and 11domestically managed projects were selected and twenty seven respondents are considered from theseprojects managed by foreign and domestic grade one general contractors and their consultants where by companies willing to cooperate for the research.

3.4. Instruments of Data Collection

Questionnaire, an interview, observational checklist and document analysis were the main data gathering instruments used. This was because of the need to collect adequate data and for triangulation purpose.

3.5.Data Collection Tools Pretest

The pretest for questionnaires, interviews and tools need pretest was not conducted to validate that the tools contents are valid or not however, the questionnaires are pretested by other researchers and some of them are extracted from inspection checklists used

3.6. Research Approaches

Research approach has been defined as a systematic and logical procedure for solving a problem with the support of facts (Yin 2003). Paton, (2002) and Stake,(2000) argue that research involves the diagnosis of information and the selection of relevant interrelated variables about which valid and reliable information is gathered, recorded and analyzed. Meanwhile, there are three, frequently used approaches of inquiry. These are quantitative approach, qualitative approach, and mixed methods approach (Creswell, 2009). Each of these approaches has theirown strengthsand weaknesses. The purpose of this study is to compare and analyze the construction safety practice of domestic and foreign contractors constructing high rise buildings construction in Addis Ababa. Based on the features, strengths and weaknesses of different research approaches the researcher found the mixed methods approach to be suitable for this study.

3.7 Data Analysis Method

This research used two types of data analysis methods, to analyze the sample data. The descriptive statistical analysis was done by used to analyze the data collected through the close-ended questions using Ms –excel statistical package.And the closed type questions from the mixed type questions in the questionnaire, the data collected using observation,open-ended questions, interview and open ended part of the mixed type of the questionnaire were analyzed using qualitative data analysis techniques some together with the results of the descriptive statisticsin order to supplement one by the other and present the data obtained from the questionnaires in a bar chart.

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter presents the analysis of the data collected fromthe participants through questionnaire, observation and interview. Analysis of a research involves examining, categorizing, tabulating, testing or otherwise combining mixed evidences to address the initial problem statement. Different statistical techniques were employed on the basisof the nature of the data collected. Consequently, the data collected from the respondents were analyzed quantitatively and qualitatively. In analyzing the quantitative data, responses were categorized or grouped and frequencies and percentage counts were used to analyze the characteristics of the population as it helps to determine the relative standing of the respondents. The data obtained through an interview, first summary sheets were prepared and field notes were written and the content of the responses were analyzed.During the analysis process the data collected from projects managed by foreign contractors and the data collected from projects managed by domestic contractorsareanalyzed separately using Ms-excel statistical tool and the results are compared.All data collected were organized and relevant answers were adopted in order to ensure a meaningful presentationand analysis of the data collected. Secondary data was used as supplementary. Theoretical concepts obtained through literature were used to interpretand compare the findings. The data is analyzed as follows.

4.2 Response Rate

Data wascollected from high rise building construction projects, during the time of study there were 30 projects which are permitted to be constructed by grade -1 general domestic and foreign contractor in the past two years. Thus out of 30 projects who are permitted 6(20%) are managed by foreign contractors and 24 (80%) are managed by domestic contractors and the study encompassed half or 15(50%) of the projects out of which 4(13.33%) are foreign managed and 11(36.67%) are managed by domestic contractors. A total of 27 survey questionnaire was given to both domestic contractor and foreign contractor managed projects respondents, of which 8(29.63%) were distributed to projects managed by foreigners and 19 (70.37%) were distributed are under domestic contractors managementprojects which subordinate. The response rate is summarized as follows in the table.

Table 4.1 response rate

Questionnaire distributed to projects managed by	Distributed	Properly filled & responded	Improperly filled and responded	Not responded
Foreign contractor	8	6	1	1
Frequency	8	6	1	1
Percentage	100.00%	75.00%	12.50%	12.50%
Questionnaire distributed to projects managed by	Distributed	Properly filled and responded	Improperly filled and responded	Not responded
Domestic contractor	19	17	1	1
Frequency	19	17	1	1
Percentage	100.00%	89.47%	5.26%	5.26%

Source: Own survey, 2018

In general for both foreign managed and domestic managed high rise building projects a total of 27 questionnaire were distributed and out of it 25(92.59%) were returned and 2(7.41%) were not returned. When we see the response rate separately out of 8(100%) distributed questionnaires to foreign managed projects 7(87.5%) are returned and 1(12.5%) not returned and from the total of 19(100%) distributed questionnaires to domestic managed projects 18 (94.73%)are returned and 1(5.26%) not returned. From the returned questionnaires 1(12.5%) of the response from foreign managed project and 1(5.26%) of the response domestic managed project are improperly filled. This makes the response rate of the study 23 (85.18%).

4.3 Analysis of Demographic Information of Respondents

Table 4.2 Demographic Characteristics of Respondents

Variable	Projects managed by foreign contractor		Projects managed by domestic contractor	
Age	Frequency	Percentage	Frequency	Percentage
22-25	1	16.67%	4	23.53%
26-40	2	33.33%	11	64.71%
41-50	1	16.67%	1	5.88%
above 50	2	33.33%	1	5.88%
Sex				
Male	5	83.33%	10	58.82%
Female	1	16.67%	7	41.18%
Profession				
Architect			1	5.88%
Civil engineer	4	66.67%	9	52.94%
Construction management			6	35.29%
Building engineer	2	33.33%		
Safety engineer			1	5.88%
Level of Education				
Advance diploma	2	33.33%		

Bachelor's degree	4	66.67%	13	76.47%
Masters			4	23.53%
Work experience				
0-5 years	1	16.67%	9	52.94%
5-10 years	1	16.67%	2	11.76%
10-15 yeas			4	23.53%
15-20 years	1	16.67%		
above 20 years	3	50.00%	2	11.76%
Employment Pattern				
Permanent	3	50.00%	13	76.47%
Temporary/Contract	1	16.67%	2	11.76%
Not indicated	1	16.67%	2	11.76%
Job Title/Rank				
Project engineer			2	11.76%
Office engineer	1	16.67%	2	11.76%
Site engineer			2	11.76%
Quality engineer			1	5.88%
Resident engineer	1	16.67%	2	11.76%
Civil engineer	1	16.67%		
Safety engineer			1	5.88%
Construction manger			1	5.88%
Site supervisor			1	5.88%
Project architect			1	5.88%
Construction engineer			2	11.76%
Project manager			2	11.76%
Quality Assurance manager	1	16.67%		
Survey site engineer	1	16.67%		
Not indicated	1	16.67%		
Nationality				
Ethiopian	5	83.33%	17	100.00%
Chinese	1	16.67%		

Source: Own survey, 2018

The demographic characteristics of the sample respondents are presented in order to understand the background of the respondents through analysis of the demographic variables. Accordingly in foreign managed high rise building projects1(16.67%) and

4(23.53%) of the respondents from high rise building projects managed by domestic contractors are aged between 22-25. 2(33.33%) of respondents from foreign managed high rise building projects and 11(64.71%) of respondents from high rise building projects managed by domestic contractors are aged 26 - 40. The response to the age range 41 – 50 shows that 1(16.67%) of the informant from foreign managed projects and 1(5.88%) of the informants from projects managed by domestic lie under this. Finally the foreign managed project respondents response show that 2(33.33%) of the respondents and 1(5.88%) of the respondent from the high rise building project managed domestic contractor are above 50 years old. To sum up as we see from the results the respondents from foreign managed high rise building projects have a balanced age distribution whereas the percentage distribution in the projects managed by domestic contractors show that 88% of the work force is under the age 40. The response regarding to sex indicates that 5(83.33%) of the informants from projects managed by foreign contractors and 10(58.82%) of the informants from projects managed by domestic contractors are male whereas 1(16.67%) of the respondent from projects managed by foreign contractors and 7(42.18%) of the respondents from projects managed by domestic contractors are females. When we compare the results projects managed by domestic contractors have a large number of female work force than the projects managed by foreign contractors.Participants were asked for their profession and the results show that respondents from foreign managed projects 4(66.67%) are civil engineers and 2(33.33%) are building engineers whereas response from projects managed by domestic contractors show that 1(5.88%) of the informant are architect, 9(52.94%) of the informants are civil engineers and 6(35.29%) are construction management professionals thus the projects

managed by domestic contractors have diversified professionals than projects managed by foreign contractors. The respondents' educational status was important that the respondents can understand the questionnaire well and also have a better understanding of safety practice issues through their education.Thus the response to the level of education of the respondents shows2(33.33%) and 4(66.67%) of the respondents from projects managed by foreign contractors hold an educational level of advance diploma and bachelor's degree respectively on the other hand 13(76.47%) and 4(23.53%) of the respondents from projects managed by domestic contractors hold bachelor's degree and master's degree respectively.As observed from the responses of the respondents one can conclude that all respondents are well knowledgeable to understand the research problem and can provide valid answers to the inquiry. Regarding the question about the work experience of the participants the following result is obtained. Respondents from projects that are managed by foreign contractors response indicated that 1(16.67%) have work experience of 0-5 years, 1(16.67%) of the respondents have 5-10 years of experience, 1(16.67%) of the respondent have 15-20 years of experience and 3(50%) of the respondents have work experience of above 20 years. On the other hand respondents from projects managed by domestic contractors response show 9(52.94%) of the participants have a work experience of 0-5 years, 2(11.76%) of the respondents have 5-10 years of experience, 4(23.53%) of the respondents have worked 15-20 years and 2(11.76%) of the participants have work experience above 20 years. Thus we can conclude that foreign contractors have a higher percentage distribution of experienced professionals whereas the domestic contractors deployed a larger number of inexperienced professionals than the foreign contractors. Regarding the employment

pattern 3(50%), 2(33.33%) of the participants from foreign managed projects are permanently and temporarily employed respectively in addition to this 1(16.67%) of the respondent do not indicated his/her response. The respondents to the employment pattern from domestically managed project indicate that 13(76.47%), 2(11.76%) of the respondents are employed permanently and temporarily respectively and 2(11.76%) of the respondents do not indicate their response to this question. The job title of the respondents of foreign managed project show that 1(16.67%) are office engineer, 1(16.67%) are resident engineers, 1(16.67%) are civil engineer 1(16.67%) are quality assurance manger 1(16.67%) are survey site engineer and 1(16.67) of the respondent do not indicate his response. On the other hand respondents of from projects that are managed by domestic contractors hold the job titles 2(11.76%) project engineers, 2(11.76%) office engineers,2(11.76%) site engineers,1(5.88%) quality engineer, 2(11.76%) resident engineers, 1(5.88%) safety engineer, 1(5.88%) construction manager, 1(5.88%) site supervisor, 1(5.88%) project architect, 2(11.76%) construction engineers,and 2(11.76%) project manager. Finally the last question about the demographic information is about the respondent's nationality and the response indicated that 5(83.33%) of the respondents and 1(16.67%) of foreign managed high rise building respondents indicated that they are Ethiopians and Chinese whereas 17(100%) of the respondents from high rise building projects managed by domestic contractor are Ethiopians. The demographic characteristics of the sample respondents are presented in order to understand the work force and enable the researcher to conclude whether that their response is valid or not.

4.4 Analysis on General Information of the Projects

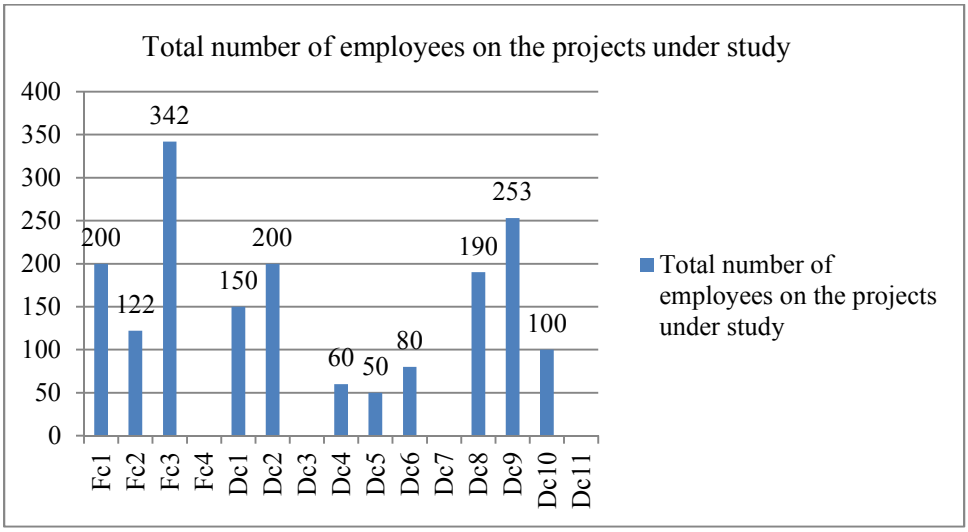
Table. 4.3. Organizations under which respondents working

	Respondents working under	
Projects	Contractor	Consultant
Managed by foreigners	4	2
Percentage	66.67%	33.33%
Managed by Domestics	11	6
Percentage	64.71%	35.29%

Source: Own survey, 2018

The table above describes the company type under which the respondents are working. Accordingly respondents from projects managed by foreign contractors account 4(66.67%) and 2(33.33%) are consultant employees of these projects and respondents from projects managed by domestic contractor account11(64.71%) and 6(35.29%) are from consultant side. Thus as we see one can conclude the respondents distribution according to organization is proportional between projects managed by foreign contractors and domestic contractors. The respondents responses to the question numbered 2.2 and 2.3 are presented in annex c of the report.Respondents are asked for the total number of employees in the projects and their response is summarized in the figure below.

Fig.4.1. Total number of employees on the projects during study period



Source: Own survey, 2018

The figure indicates that three and one foreign contractor (Fc4) two domestic (Dc7 & Dc11) doesn't indicate the number of employees they have on their project site and the number of employees in the domestic contractors range from 50 to 253 whereas the number of employees in the foreign contractors range 122-342. Thus foreign contractors have high employees. Participants were also asked for the current status of the projects and their response is indicated the table below.

Table.4.4. Current status of the projects under study

	Current status of the projects under study		
Projects managed by	Sub Structure	Super Structure	Finishing
Foreign contractors	1	3	
Percentage	25.00%	75.00%	
Domestic contractors	1	6	4

Percentage	9.09%	54.55%	36.36%

Source: Own survey, 2018

As shown in the table above projects managed by foreign contractors 1(25%) are under sub structure and 3(75%) are under super structure structural work whereas the projects managed by domestic contractors account 1(9.09%) under sub structure, 6(54.55%) under super structure work and 4(36.36%) under finishing. Thus the projects under study are at different status which also directly relates to the safety practice concern. The last question about the general information of the projects is about the category of the project which indicates that the different categories of high rise buildings.

Table.4.5. Categories of the projects

Projects managed by	Office building	Mixed Use Building	Institutional Building	Hotel	Commercial building
Foreign contractors	3	1			
Percentage	75.00%	25.00%			
Domestic contractors	3	3	1	3	1
Percentage	27.27%	27.27%	9.09%	27.27%	9.09%

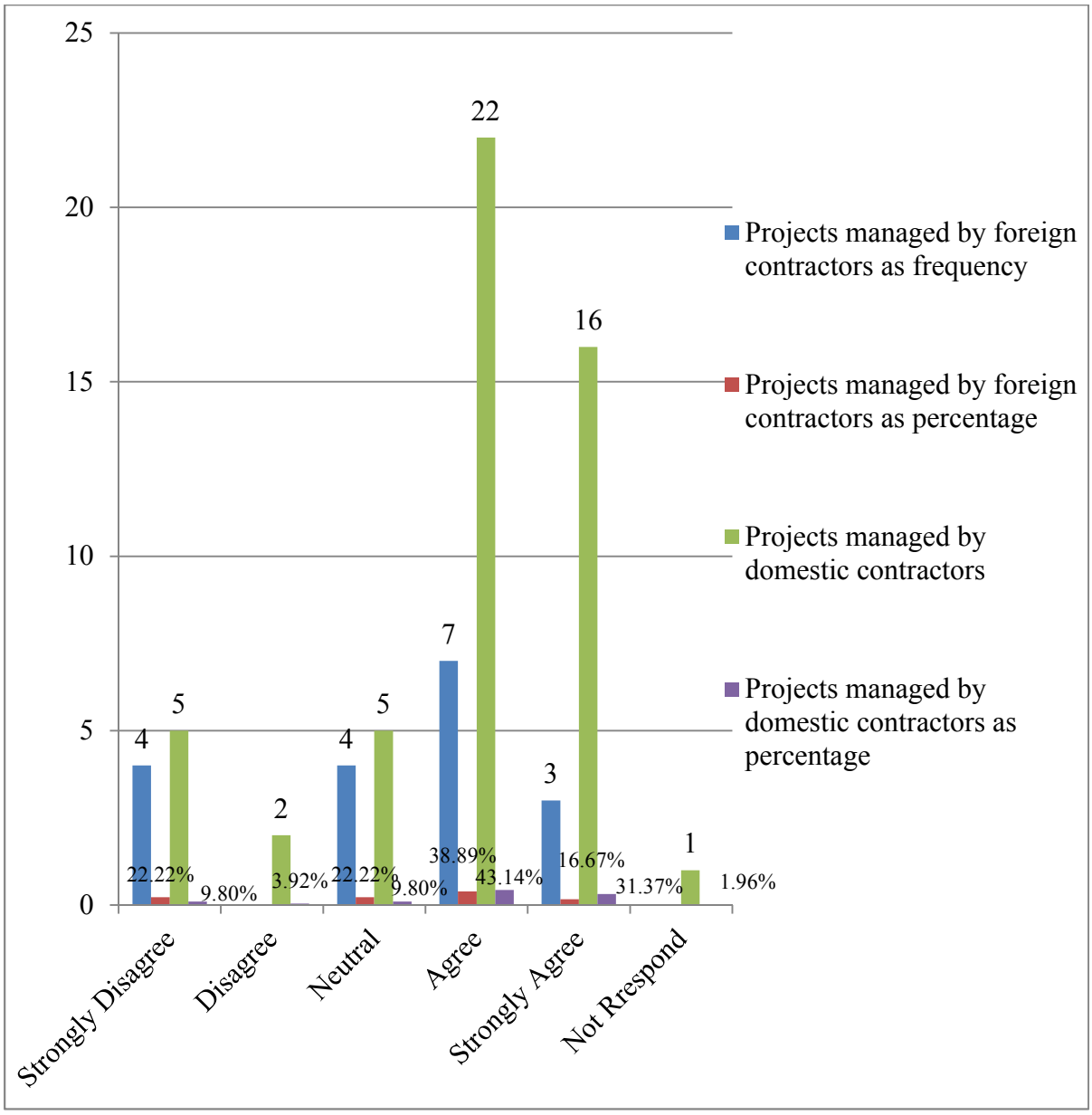
Source: Own survey, 2018

3(75%) of the projects managed by foreign contractors are office buildings and 1(25%) of the buildings are mixed use buildings and 3(27.27%) of the projects are office building, 3(27.27%) of the projects are mixed use buildings, 1(9.09%) institutional building, 3(27.27%) hotels and 1(9.09%) commercial buildings. Thus the study covered a variety of high rise building categories which enables the researcher to find different exposures from the respondents about safety practice besides the research incorporated different categories of projects.

4.5Quantitative Data analysis

4.5.1 Analysis of safety practice on sites

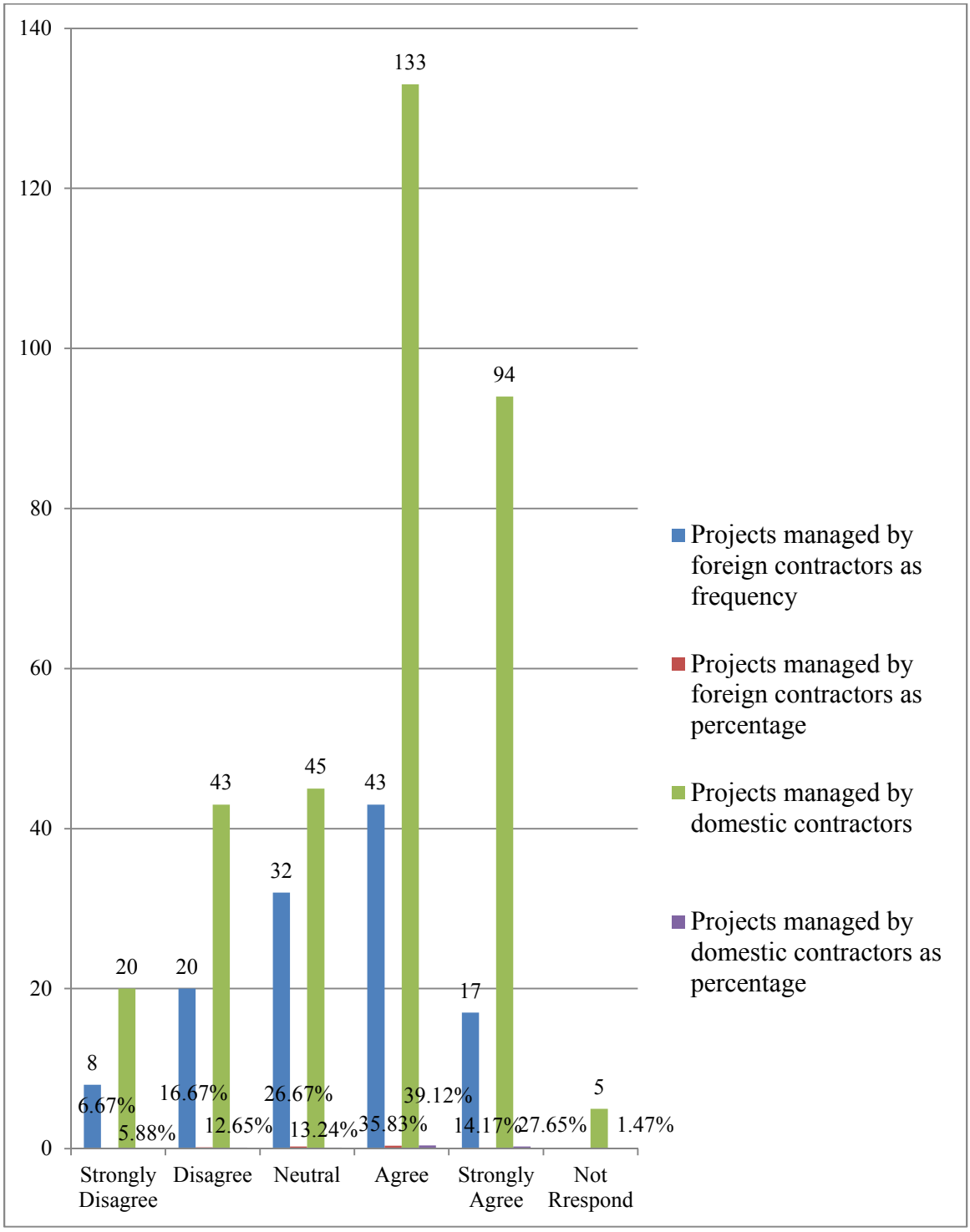
Figure .4.2. Summary of responses on site safety management arrangement



Source: Own survey, 2018

As it can be seen in the chart the responses indicate that 4(22.22%) of respondents from projects managed by foreign contractors strongly disagree on the arrangement of site safety management on their project whereas the respondents from projects managed by domestic contractors show only 5(9.8%) strongly disagreed and only 2(9.2%) of the informants from projects managed by foreign contractors disagreed on the statements that express site safety management arrangements. Again 4(22.22%) of the foreign managed project respondents show their neutrality to the statements and respondents from projects managed by domestic contractors only 5(9.80%) showed their neutral response. 7(38.89%) of respondents from foreign managed contractors and 22(43.14%) agreed the arrangement of site safety management on their project and 3(16.67%) of respondents from foreign managed projects and 16(31.37%) strongly agreed on the statements of site safety management arrangement and only 1(1.96%) of respondents from the projects managed by domestic contractors response from the total doesn't indicate the response to single statement out of three statements. Thus, the comparison clearly indicates that the existence of difference between domestic and foreign managed contractor projects on site safety management arrangement on their site.In addition to this responses on each statements of the variable site safety management indicate how the contractors are exercising safety practice at high rise building construction site.

Figure .4.3. Summary of responses on work place precaution and active monitoring



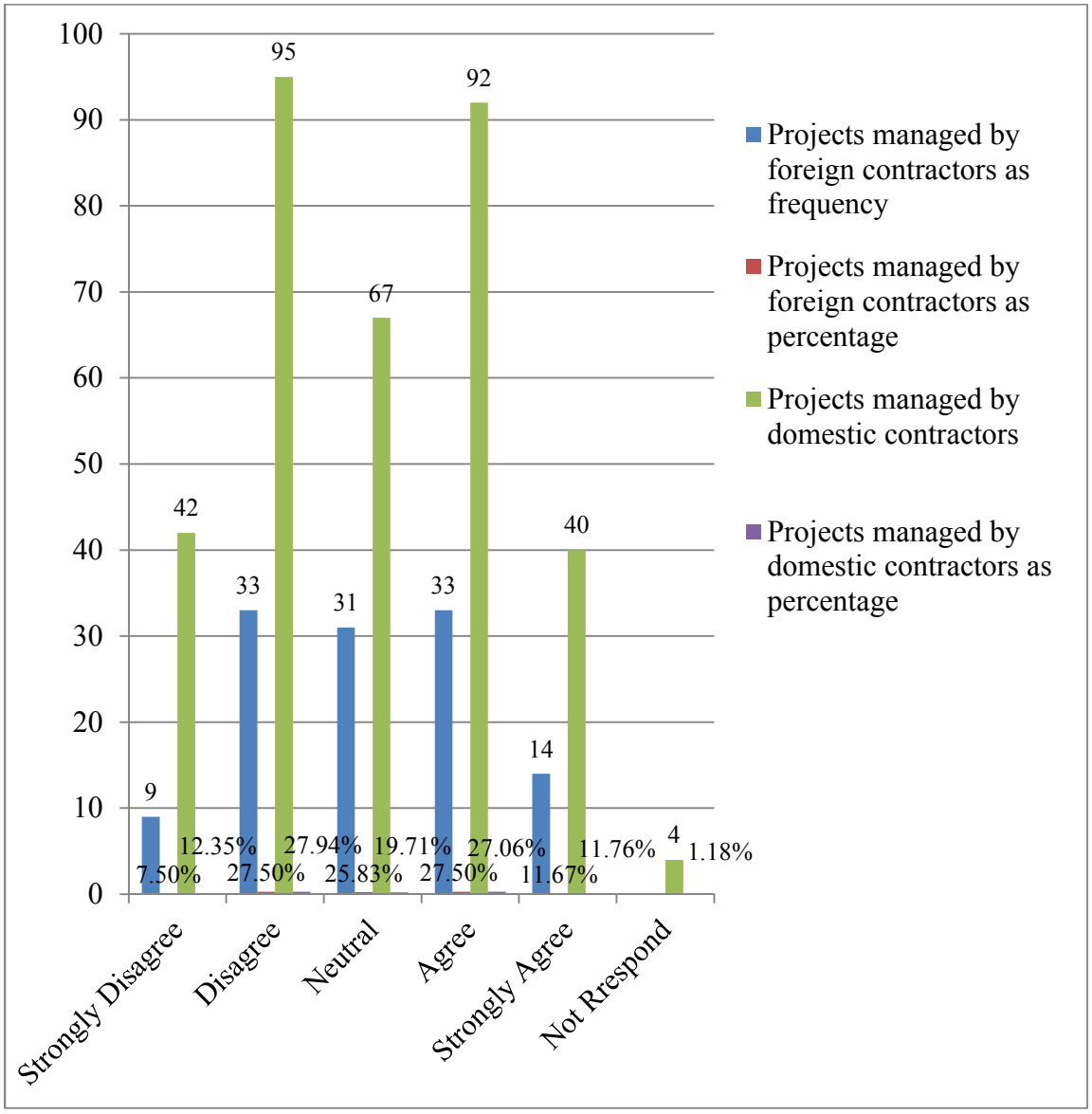
Source: Own survey, 2018

As it is presented in the chart the responses on work place precaution and active monitoring indicates that 8(6.67%) of the respondents from foreign managed projects and 20(5.88%) of the respondents from projects managed by domestic contractors indicate their strong disagreement on exercising work place precaution and making active monitoring on their site and 20(16.67%) of respondents from the foreign managed projects, 43(12.65%) of respondents from domestic contractor managed projects indicated their disagreement on exercising work place precaution and active monitoring measures on their project site and 32(26.67%) and 45(13.24%) of the respondents from projects managed by foreign contractors and domestic contractors respectively show their neutrality the statements and 43(35.83%) and 133(39.12%) of respondents from foreign managed and from domestic managed contractors indicated their agreement respectively and the analysis shows that 17(14.17%) and 94(27.65%) of respondents from projects managed by foreign contractors and from projects managed by domestics strongly agreed while respondents from projects managed by domestic contractors who do not respond account 5(1.47%). Thus one can summarize the analysis on work place precaution and active monitoring practices that more than 50% of the respondents agreed and strongly agreed from both sides on the statements this implies that they are exercising proactive measures on their sites and almost the respondent from foreign managed projects are twice larger than respondents from projects managed by foreign contractors who responded neutrality. On the other hand the strong disagreements and disagreements on the statements from both sides are close ranged and account almost 23% which implies that these contractors are not practicing the work place precaution and active monitoring

on their sites while the neutrality remains unknown. The above two closed ended questions are introduced to indicate the existence of difference in exercising safety practice between foreign contractor managed project and domestic managed projects and reveling how they are exercising in combination with the quantitative analysis.

4.5.2 Analysis of Safety Practice Challenges

Figure .4.4. Summary of responses on challenges of exercising safety practice



Source: Own survey, 2018

The responses regarding to the challenges on exercising safety practices on project sites show that 9(7.50%) of informants from foreign managed projects and 42(12.35%) of the informants from projects managed by domestic contractors indicated their strong disagreement and 33(27.50%) and 95(27.945) of the informants from foreign and domestic manage projects showed their disagreement respectively on the statements while 31(25.83%) and 92(27.06%) of participants from projects managed by foreign and domestic contractors respectively show their neutrality to the statements about the challenges of safety practice on their project site whereas 33(27.50%) of the participants from foreign managed contractors and 92(27.06%) of the participants agreed on the statementsabout the challenges of exercising safety practice on their project site in addition to this 14(11.67%) of informants from foreign managed project and 40(11.76%) of informants supported the statements about the challenges of exercising safety practice on their site by strongly agreeing to the statements on their response and finally informants from projects managed by domestic contractors do not responded to 4(1.18%) of the statements. In summary there is no free site in construction sites due to several factors.Thus, the result of the analysis show that the responses are parallel with the response of work place precaution and active monitoring and do not show either extremes only in the result not only this they didn't also lie only in the middle.

4.6. Analysis of quantitative Data's

The qualitative analysis of to the question focuses on thecontents of the response in order to substantiate the quantitative results. Accordingly the informants were asked about the

best safety practice they had experienced and respondents from projects managed by foreign contractors indicated that they had experiencedunder the following safety practices

- Use of Protection wall (Hoarding) and nets
- Cover ducts and guardopenings
- Apply safe working methodology and use safety equipment
- Conduct safety training
- Warning signs and safety plans

And respondents from projects managed by domestic contractors indicated on their response that they had experienced the following safety practices

- Provision of PPE and Use of PPE
- Proper and frequent induction on safety rules
- Existence of enforcing mechanisms to follow the safety norm
- Conducting risk and hazard assessment
- Applying of protection wall at height & shoring at sub structure work
- Not allowing persons without wearing PPE to the site

Alsorespondents were asked for which contractor learns these best practices from the other and the response shows that totally domestic contractor learn the following from the foreign contractors the following safety practices

According toforeign contractor professional employee's response domestic contractors learn from foreign

- Provision of safety equipment for every worker
- Application of safe work methodology
- Using protection wall and safety nets
- Considering the cost for safety in their overhead and profit during bidding
- Using high end equipment's
- Warning signs and safety plans
- To put a ban on employees who do not respect the companies safety regulation

And only a single respondent indicated in his/her response thatforeign contractors learn from domestic

- How to handle things with labours

Respondents were also asked to mention the major differences of domestic and foreign contractors regarding safety practice and the respondents mentioned the following

Foreign contractor professional employee's respond that domestic contractors lack

- Have no or have little knowledge of the international standard
- Have no or have little capacity (experience and budget)
- Give little attention for safety (little concern and costly)
- Lack safety plan

Whereas the foreign contractors:-

- Highly concerned for safety
- Have good safety culture and Plan for Zero accident

- Take safety as an investment not as a cost
- Have the knowhow, budget and experience
- Experience safe construction

In the last question of the qualitative question participants are asked for their suggestion in order to improve the safety practice in high rise building construction and their response is summarized as follows

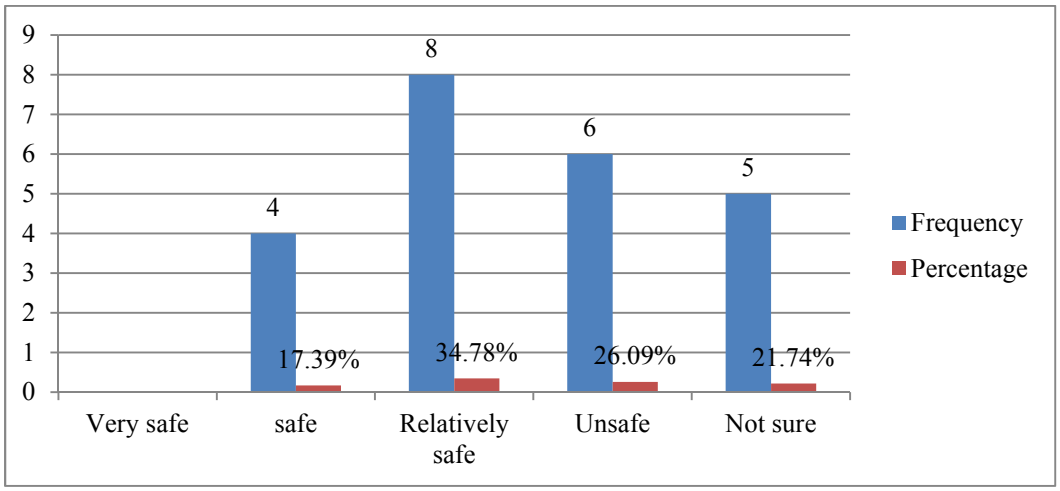
- Provision of safety materials and equipment
- Giving orientations to employees
- Allocate enough budget
- Involve all stakeholders of the project to participate in the safety policy
- Consultants should be responsible for the implementation of safety practice
- Construction agreements should incorporate safety provisions in their contract and objectives of the parties to be mentioned
- Creating awareness on both parties involve in the project
- Gov't should enforce the contractor as well as the client to respect the countries labour law and should facilitate and provide the tools at site
- To have the best safety guidelines and implemented
- Create awareness on safety practice
- Consider the its cost during bidding
- Not allocate only budget but also make check and balance
- Clients should consider safety as a separate item and fix price for their project

- Very strict follow up from the gov't and taking measures on the organizations that do notfollow the rule

4.6.1.Analysis of qualitative and quantitative questions

The mixed type question or questions that are analyzed qualitatively and quantitativelyare presented in the last part of question type in the questionnaire and the responses of the professionals on these type questions are summarized as follows

Figure .4.5. Summary of distribution of responses on how safe high rise building constructions are

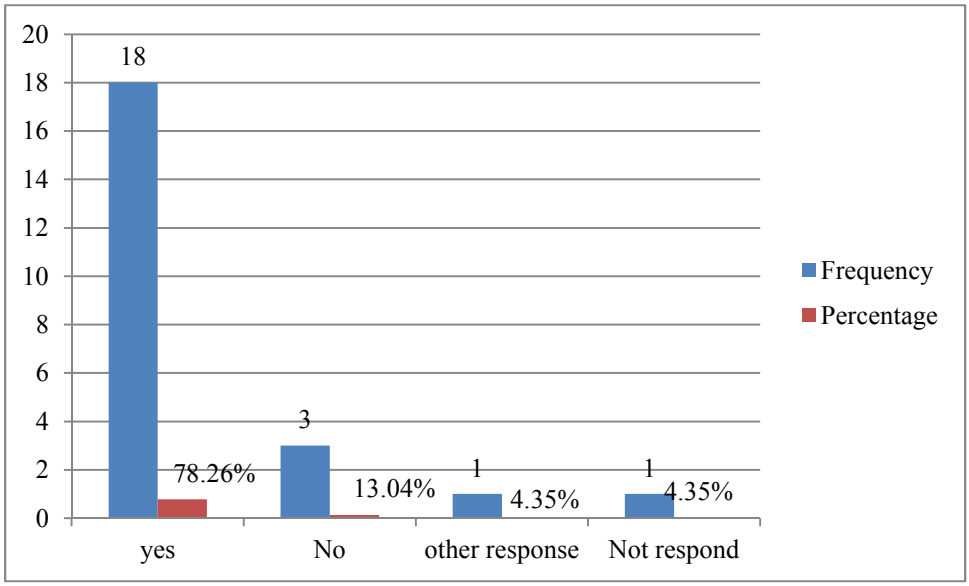


Source: Own survey, 2018

4(17.39%) of the respondents indicate that high rise building constructions are safe and give their reasoned that contractors use a safe working methodology and because high rise building construction is done by well-organized contractors local and international and also the topography of the city is good and 8(34.78%) of the informants responded that it is relatively safe and the reason is that it mostly involve experienced professionals,

because of high medical cost and most high rise buildings are located at the main roads which makes them observable by third party and by the government so contractors are concerned and because of little safety measurement most of the buildings are constructed by foreign contractors and foreign contractors have better practice whereas 6(26.09%) of the respondents indicate that it is un safe because of safety precautions are not exercised willfully and because they are taken as an option not as mandatory and 5(21.74%) of the respondents respond that they are not sure and the reason is that some use safety rules and regulations appropriately some do not and unless there exist a figurative study that show how safe are high rise building constructions are it is difficult to conclude.Respondents were also asked for their opinion whether there exists differences between foreign and domestic contractors and their response is shown in the figure below.

Figure.4.6. Summary of distribution of responses on how safe high rise building constructions are in Addis Ababa



Source: Own survey, 2018

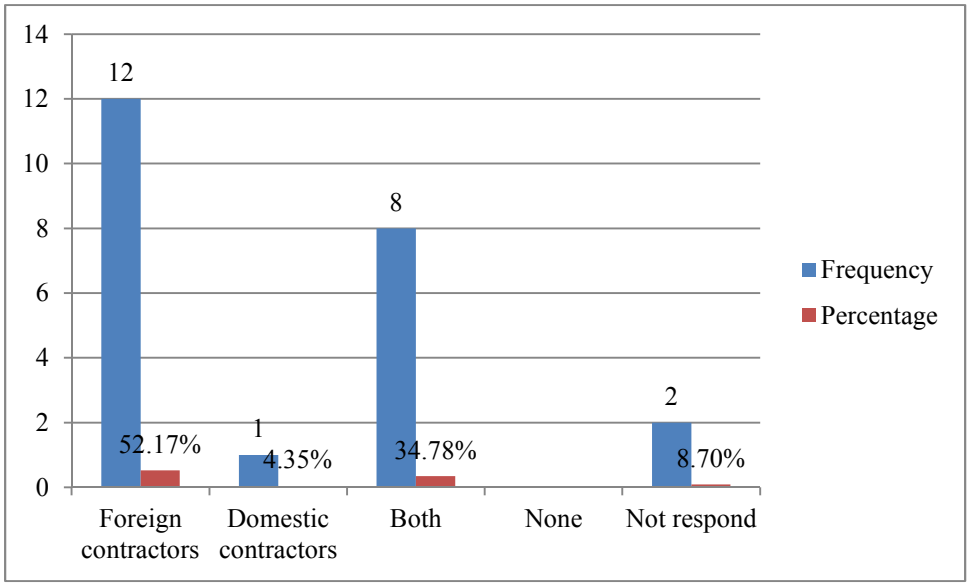
18(78.26%) of the respondents indicated that there exist differences between foreign and local contractors in exercising safety practice for the reasons that

- foreign contractor give attention to safety
- have the necessary safety equipment,
- their machines are safe
- laborers are not exposed to do things unsafely
- Foreign governments have already established safety culture
- Foreign contractors use many safety practice which result lesser accidents
- Capacity difference
- Domestic contractors have weak relationship with stakeholders regarding safety
- Because of the difference on safety perception
- Because of lack of knowledge of supervisors and contractors
- Because of foreign contractors are awarded the projects at high cost
- Because domestic contractors focus on profit maximization
- Most high rise buildings are constructed by foreign contractors and foreign contractors have better practice than domestic
- Foreign contractors are aware of safety practices in the international standard,
- Foreign contractors have the capacity to handle safety issue in terms of cost and experience,
- Foreign contractors give more attention and are highly concerned for safety
- Domestic contractors have little know how on safety practices in the international standard,

- Domestic contractors have no the capacity to handle safety issue in terms of cost and experience,
- Domestic contractors didn't give more attention and are not concerned about safety issues
- There is a difference in providing safety equipment's, enforcing safety procedures and enforcing any person to wear PPE's on site and providing safe working condition
- Because foreign contractors fully exercise the practice of safety and domestic contractors do not
- Foreign contractors urge to make sure safety practices are applied whatever the cost might be
- Foreign contractors are more and domestics are less in safety provisions
- Because foreign contractors provide immediate and frequent inductions to their workers

And 3(13.04%) of the respondents indicated that there exists no difference in exercising safety practice between foreign contractors and domestic one the reason is that because some domestic contractors exercise all safety regulations and in addition to this in any way the idea of safety is keeping the worker safe from injury so no difference exists, there exist a weakness in the construction regulatory which is in practice and 1(4.355) of the respondent answered that he/she do not know whereas the other 1(4.35%) not responded to the question.

Fig .4.7. Summary of distribution of responses to the question which contractors exercise safety practice accordingly



Source: Own survey, 2018

12(52.17%) of the respondents indicated that foreign contractors are the one who exercise safety practice accordingly in the projects under their management due to the facts that

- .Foreign contractors have high cultural development regarding safety and health
- The increased rate of skilled labourer and workmanship
- Their work site is safe
- They have safety experts
- They implement and keep safety rule
- They practice safe engineering works

- Highly concerned about safety and excellent awareness of using PPE
- Foreigners are exercising because they are profitable and they are invited contractors they quote high price
- Are aware of safety practices in the international standard
- Have the capacity to handle safety issue in terms of cost and experience
- Give more attention to workers safety
- Have the necessary materials needed for safety practice
- Have strong safety measures
- Give priority to safety of worker than the job itself
- Have the effort
- Trades are become aware
- Their clients are willing to pay
- the law of enforcing increases

And 1(4.35%) of the respondent indicated that domestic contractors are the one who exercise safety accordingly on the projects under their management and the reason is that

- domestic contractors have better capacity than the foreign contractors

Whereas 8(34.78%) of the respondents indicate that both sides of contractors exercise safety practice on their projects accordingly

- The existing competence from foreigners
- Domestics fail only because of low price quotation
- General contractors take large projects
- There exist only a scale difference on safety practice

And finally 2(8.70%) of the respondents not indicated which contractors exercise safety accordingly. In summary this one conclude that using this questions one can grasp the architecture of safety practice in high rise building construction projects in Addis Ababa.

4.7.Analysis of Site Observation Data's

During distributing the questionnaire the researcher tries to perform personal observations in high rise building construction sites under study and take photographs from where photographing is not prohibited the observation results substantiate and used as a triangulation means in the study. The observation check list contains fifteen statements that guide the researcher during his observation. The observation checklist is attached in the annex of the paper. The results of site observations showed the following:

- Foreign contractors do not have a written safety policy posted at suitable place and readable in their project site where as two domestic contractors do have as shown in the figure below.

Fig. 4.8. Domestic contractor's written safety policy at project site

Source: Own survey, 2018

- Regarding the provision of PPE's both domestic and foreign contractors provide hard hats, and reflective coat which are commonly taken as the only PPE's however the foreign contractors and some domestic contractors in addition to

these provide different types of gloves according to the trade, safety belts and goggles

- Regarding the first aid kit only three domestic contractors do not provide first aid kit at project site and first aider two foreign contractors and four domestic contractors have no first aider on site
- Most of the contractors fail to provide adequate welfares(toilet, water, canteen, changing rooms etc.) on site only two domestic contractors provide
- Almost half of the domestic contractors do not provide or do not have adequate warning signs and foreign contractors use warning signs that have foreign language characters this is also observed in some of domestics contractors

Fig. 4.8. Warning signs described in foreign languages and having both local and foreign languagesdescription

Source: Own survey, 2018

- In all foreign contractor project sites holes and ducts are covered open areas and edges are guarded using reinforcement bars anchored in the structure, a few domestic contractors also try to guard openings using eucalyptus props however

most of domestic contractor's construction sites edges and horizontal and vertical openings are not properly covered

- Wall protection (hoarding) is totally used by foreign contractors no single domestic contractor use wall protection system and using of nets is not accustomed to most domestic contractors
- Most of the sites in the study their perimeter is protected and no site has an emergency exit, only a single domestic contractor has an emergency number posted where every worker can see it and only two foreign contractors project sites have stationed car for the case of emergency most of the other use the car assigned for the projects other purposes
- All of the construction sites have suitable fire extinguisher except three domestic contractors and only one domestic and one foreign contractors provide alarm for the case of emergency and two domestic contractors use whistle for emergency the remaining others do not provide any of the system
- All of the sites use shoring work and most of the domestic contractors use wooden ladders whereas the foreigners have appropriate ladder at sufficient interval
- Only foreign contractors use 100% steel scaffolding and some domestic contractors use in combination and most of domestic contractors use eucalyptus wood scaffolding
- Almost half of the domestic contractors from the study do not have accident or incident log book and those contractors who do have also record only major accidents

4.8Analysis of Interview Questions

Theresearcher uses six structured interview general questions regarding safety practice and out of the total participant only thirteen of them is willing to give the interview and most of them answer some of the questions and the result is summarized as follows

Q.1.From your experience, both domestic and foreign general one (GC-1) contractors who are currently constructing high rise buildings in Addis Ababa exercise safety practice accordingly?

Three (23.08%) of the interviewees answer to the above question that only foreign contractors exercise safety accordingly and the other 3(23.08%) participants indicate that both exercise safety practice and only 2(15.38%) of the respondent disagree with the statement that both grade one general constructors in Addis Ababa exercise safety accordingly while 5(38.46%) of the interviewees do not answer the question.

Q.2. In your opinion the contractor under whom you are working or under your supervision exercise safety practice accordingly?

7(53.85%) of the interviewees answered yes and 3(23.08%) answered yes but on average scale 1(7.69%) disagree and 2(15.38%) did not respond to the question.

Q.3. How do you exercise safety practice in this project site?

The interviewees respond that they exercise safety

- According to the contract document and the law of the country 1(7.69%)

- By their safety department and safety manager on the site 3(23.08%)
- According to the safety practice requirement on the site 5(38.46%)
- By giving immediate induction to workers 2(15.38%)
- 2(15.38%) not respond

Q.4. Have you been observed an accident occurred in this site?

1(7.69%) not respond to this question 9(69.23%) answer yes and out of the nine two of them specify that the accident cause death whereas the remaining 7 caused minor injury and 3(23.08%) answered no

Q.5. had an accident been occurred in this site? What was the cause/s?

1(7.69%) not respond to this question 3(23.08%) answered yes and the cause was not wearing PPE and 3(23.08%) answered yes and the cause was negligence and 2(15.38%) answered no 4(30.77%) answered yes and the cause was work process

Q.6. Can you mention the Ethiopian safety rules, directives, regulations and standards that you know.

Only 3(23.08%) of the respondents answered the following to the last interview questions 1(7.69%) mentioned the new EBCS 14 and 1(7.09%)mentioned the national occupational health and safety strategic policy and the remaining answered that MOLSA rules and labor proclamations.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1. Introduction

This chapter aimed to see into 'what was asked?', 'what were the Objectives?' and 'what the findings were, and make sense out of their relationships. This final chapter presents the key findings emanating from the data analysis. Based on these findings, accordingly, the conclusions and recommendations were presented corresponding to the objectives of the research for the entire study.

5.2. Summary of Key Findings

Based on the study undertaken, the researcher has come up with the following findings. The findings indicate that

- The response indicates that respondents from foreign contractor managed projects 50% are under the age 40 whereas respondents from projects managed by domestic contractors account 88% and regarding to gender distributions the foreign managed projects hired more male (83%) than the locals which account about 58% the remaining is filled by females. When we see the respondents profession respondents from foreign managed projects are civil and building engineering professionals. On the other hand informants from projects managed by domestic contractors are architects, civil engineers, safety engineers and construction management professionals. Regarding to the level of education

foreign contractor managed projects involve professionals with advance diploma and bachelor degree holders whereas respondents from projects managed by domestic contractors hold bachelor and master's degree. Thus,all respondents are well knowledge able to understand the research problem and can provide valid answers to the inquiry and when we see the experience of the respondents foreign managed projects involve professionals with high experience whereas projects managed by domestic contractors involve high number of inexperienced professionalsthan their counter parts and respondents of project under domestic contractor management do have a variety of job positions with high number of permanent employees than their counter part and almost all of the respondents are Ethiopians only a single respondent is Chinese

- Respondents from each project managed by foreign contractor and domestic contractor are taken from contractors and consultants and are proportional and the foreign managed projects have higher number of employees than the domestic ones the project status covers under sub structure and super structure work for both except the projects under domestic contractors include projects that are on finishing work and most of the projects under foreign management are office buildings whereas the projects under domestic contractors management have different building categories.
- Regarding safety management arrangement on their site the respondents from foreign managed projects response show greater disagreement by 8.5% than the projects managed by domestic ones in addition to this response from foreign managed projects for the agreement of the statements is lesser than by 19% and

their response also shows a 12% increase indicating their neutral response to the statements. Regarding work place precaution and active monitoring there is only a 5% difference projects under foreign management disagree a little bit and when we see the neutral response the foreign managed project is double of the project under domestic contractor management contrary to these the domestic contractors respondents show a 17% greater agreement to the statements on work place precaution and active monitoring. The response to the statements on the challenges in exercising safety practice at project sites indicate that there is no any significant difference in agreeing and disagreeing to the statements there exist a 6% higher response from foreign managed project in the response that indicate neutrality. Respondents mentioned what they have experienced and some of the domestic contractor managed projects mentioned that they never had the best experience yet as we see their work experience they are in experienced and all of them indicated what domestic contractors learn from their counter parts and these lessons are provision of PPE's and enforcing mechanisms to follow safety norm, use of protection system, following safe work methodology and safety plan are some of the key points that domestic contractors are expected to learn and regarding to the major difference foreign contractors have the capacity in terms of cost and experience to exercise safetypractice accordingly, have considered the cost associated with it during bidding, have good safety culture and because they are invited contractors they are taking jobs with the price they quoted which enables them to handle the cost for exercising safety whereas the reverse is true for the domestic contractors according to the response

and the respondents suggested that the government must use enforcing mechanisms, the local contractors should consider the cost for safety during bidding , the clients also need to consider the cost expected to exercise safety, all stake holders need to discuss and agree on the safety practice of the project and induction and trainings need to be provided for the workers. The result from the site observation revealed that only two local contractors only provide a written safety policy and welfares properly at their project site regarding safety signs 50% of the domestic contractors fail to provide adequate and appropriate warning signs plus all foreign and some contractors from both use signs with foreign language description and openings and edges are properly covered in foreign managed projects than the domestic ones, only three local contractors have failed to provide fire extinguisher on project site single contractors from each side provided alarm system whereas two domestic contractors use whistle for emergency and only the foreign contractors use steel scaffolding all in all. The results from interview question showed that foreign contractors exercise accordingly and more than 50% of the respondents believe that the contractor under whom they are working do exercise safety accordingly and almost 70% of the respondents personally observed an accident on their site due causing death and injury and according to the respondents work process, negligence and not using safety equipment's were the causes of the accidents regarding to the rules and regulations that they know only 23% responded from domestic contractor managed projects answered partially thus it is clear that the rules and regulations are not well known by the professionals.

5.3 Conclusions

This study aimed to compare and the current construction safety practice of domestic and foreign contractors managing high rise buildings construction in Addis Ababa Ethiopia. Inpursuing this objective, the study adopted a strategy and approached in a holistic view of safety practice of high rise building construction sites. The results from different instruments used show the real landscape of the safety practice of domestic and foreign contractors. Thus one can conclude clearly that there exist differences between domestic and foreign contractors in exercising building construction safety practiceThe previous studies most of them conducted on domestic contractors with different class and grades by different researchers concluded that the safety practice is very low keeping in mind thus studies do not incorporate foreign contractors on their study even if the foreigners take the lion's share of the construction market. Since the aim of this study focus in indicating or exploring the existence of the differences it doesn't indicate the degree of the difference.The differences can be summarized as capacity difference in terms of cost and experience, safety perception of the contractors, enforcing and inspection mechanisms. Even if there exist differences the results of this research indicated that there exist some challenges and gaps in exercising safety practice and this is the case for both contractors and this gaps and challenges are found to be similar to both sides of the projects under management of foreign and domestic contractors and these challenges are

- Not having a written safety policy and communicating it,
- Having and using warnings and signs that have a foreign language description

- Not having an alarm system, emergency numbers and exit systems
- Not having adequate welfares, first Aider onsite
- Not properly and fully covering the buildings
- Not having a stationed car for the case of emergency
- Recording only accidents that cause major injuries
- The standards, rules regulations and directives of the countryare not well known by the professionals

And the best experiences that one could learn is that foreign contractors learn is that communicating their policies to every stake holder of the project, provision of safety signs and warning signs with local working language description, provision of adequate welfares to their employees and the domestic contractors learn from their counter parts is that to consider the cost for safety during bidding, to use safe work methodology like their counter parts, to establish and implement safety plans to use wall protections and safety nets appropriately and to provide orientations, PPE's and from the result we can conclude that how the contractors are exercising safety practice. Most of the contractors are not exercising safety practice at their best in some of the projects the cost for safety is incurred in the contract document however the practice is below expected. To summarize the conclusion the high rise building constructions are relatively safe however, the professionals working in these projects found to be unaware of the rules, regulations standards of the country this is mainly because of the contractors are using inexperienced

or less experienced professionals to cut their cost and thus a lot has to be done in order to enhance the safety practice.

5.4. Recommendation

On the basis of the major findings of the study, the researches directs the following pointsarticle 37 of the labor proclamation no. 377/2003 of the FDRE and ES 3901-1:2015 article 4 requires that employers should have written safety and health policy, documented, implemented, maintained, communicated to all persons working under the control of the organization and should be available to all parties and also should be revised periodically thus both foreign and domestic contractors need to exercise accordingly as per the national and international standards of safety like OSHA and ILO standard whereas on the hand in the same manner, the contractors should also plan emergency routes and exits, traffic routes, danger areas, loading bays, ramps, ensure provision of safe work equipment, with due care to their suitability, selection, safety features, safe use, training and information, inspection and maintenance and specifically the domestic contractors need to adapt using of wall protection, safety nets, and soil protection methods since this areas are found to be most dangerous and the consultants need to follow up the safety and health condition of the project site accordingly and has to make an inspection for each item of work that the method adopted by the contractor is whether safe or not the government must provide sustainable programs in collaboration with contractors and professional associations, higher educational institutions in familiarizing the standards , rules and regulations of the country where as the clients need to consider the cost associated with the exercising safety and not only allocate the budget but also make sure it is well speeded on what is targeted and make sure that their

project is safe. The professionals involved in high rise building construction must have background knowledge, must know the rules, standards, regulations and directives of the country and should not enforce labours to work in unsafe conditions. The workers must be aware of the safety norms and act accordingly and in case of the safety practice non-conformity they must report to the concerned bodyand should not agree to work where the condition is unsafe.Every one safety first a work done unsafely is a work not doneat all.

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Appendix A: Support Letter of the University for the Study

አዲስ አበባ ሣይንስና ቴክኖሎጂ ዩኒቨርሲቲ
የተፈጥሮ እና ማህበራዊ ሳይንስ ኮሌጅ

Addis Ababa Science & Technology University
College of Natural and Social Sciences

ቁጥር ያተሳሠ/ዞ236/ሰ0631/ሂ0

ቀን _____

ለሚመለከተው ሁሉ
አዲስ አበባ

ጉዳዩ፡- ትብብር እንዲደረግላቸው ስለመጠየቅ ፣

ከላይ በርዕሱ ለመጥቀስ እንደተሞከረው ተማሪ ግርማ ገረመው በቀን 11/07/2010 ዓ.ም በተፃፈ ማመልከቻ በዩኒቨርሲቲያችን የቢዝነስና ማኔጅመንት ትምህርት ክፍል በድህረ-ምረቃ መርሃ-ግብር የኮንስትራክሽን ማኔጅመንት ተማሪ በመሆናቸው በ"Safety practice in construction projects in Ethiopia a comparative analysis of Ethiopian and foreign contractors" ርዕስ ዙሪያ መረጃ ለማሰባሰብ ይረዳኝ ዘንድ ለሚመለከተው ሁሉ ተብሎ የድጋፍ ደብዳቤ እንዲፃፍልኝ በማለት ጠይቀዋል።

በመሆኑም ተማሪ ግርማ ገረመው ID No GSR 233/09 በአዲስ አበባ ሳይንስና ቴክኖሎጂ ዩኒቨርስቲ በተፈጥሮና ማህበራዊ ሣይንስ ኮሌጅ በቢዝነስና ማኔጅመንት ትምህርት ክፍል በድህረ-ምረቃ መርሃ-ግብር የኮንስትራክሽን ማኔጅመንት ተመራቂ ተማሪ ሲሆን በተሰጣቸዉ በ"Safety practice in construction projects in Ethiopia a comparative analysis of Ethiopian and foreign contractors" ጥናት ርዕስ ላይ መረጃ ለማሰባሰብ ይረዳቸዉ ዘንድ በእናንተ በኩል አስፈላጊው ትብብር እንዲደረግላቸው በአክብሮት እንጠይቃለን።

ከሠላምታ ጋር

የተፈጥሮ እና ማህበራዊ ሣይንስ ኮሌጅ
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Dr Terefe Getachew Beyene
ዶ/ር ተረፈ ጌታቸው በየነ
የተፈጥሮና ማህበራዊ ሣይንስ ኮሌጅ ዲን
Dean, College of Natural & Social Sciences

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አዲሰዓለም

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Appendix B: Questionnaire

B.1 Questionnaire cover letter

ADDIS ABABA SCIENCE AND TECHNOLOGY UNIVERSITY

POST GRADUATE STUDY PROGRAM

Research Questionnaire

Dear Sir/ Madam,

This questionnaire is prepared to gather data for the purpose of an academic research entitled **"Safety Practice in Addis Ababa High Rise Building Construction Projects: A Comparative Study Between Domestic and Foreign Contractors."** which is a requirement for the partial fulfillment of Master of business Administration degree in Construction Management at Addis Ababa Science and Technology University. The collected data will only be used for academic purpose, and it will not be disclosed to third party nor presented at any level. To come up with important results, your support in providing reliable information regarding the existing safety practice will be instrumental. The result of this research will help towards the enhancement of the implementation of building construction safety practice further. Particular mentioning of names will not be required anywhere.

If you have any queries regarding the questionnaire, do not hesitate to contact me.

Name of the researcher: GirmaGeremew

Cell phone: +251 9 - 12 65 49 39

E- Mail: - girumgize@gmail.com

Advisor: TilahunGoshu (PhD)

Finally, I would like to thank you for your valuable time and cooperation.

B.2. Questionnaire

Dear Participant,

The following are questions aimed at facilitating data collection for master's thesis. You are kindly requested to respond by choosing, ticking, filling up or comment, as appropriate.

While Filling the Questionnaire:

1. Carefully read the question statements and choices.

2. Try to be objective and true as much as you can.

Part I Demographic Information of Respondents

Direction: Please indicate your answer by ticking [√] or filling up or comment, as appropriate.

1**.** Age of respondent

22-25 [ ] 26-40 [ ] 40-50 [ ] above 50 [ ]

2. Sex Male [ ] Female [ ]

3. Please indicate your profession

Architect [ ] Civil Engineer [ ] Construction Mgmt& Tech. [ ]

Building Engineer [ ] Safety Engineer [ ] Construction Technician [ ]

Other: Please Specify_____

4. Please indicate your level of education

Diploma [ ] Advance Diploma [ ] Bachelor's Degree [ ]

Master's Degree [ ] PhD [ ] other: Please Specify_____

5. Please indicate your work experience

0- 5 years [ ] 5-10 years [ ] 10- 15 years [ ]

15-20 years [ ] above 20 years [ ]

6. Employment Pattern

Permanent [ ] Temporary/ Contract [ ]

6. What is your job position/title/rank/ in your organization? _____

7. What is your Nationality? _____

Part II General Information about the Project

Direction: Please provide the requested information on the space provided.

2.1 Choose from below that describes the organization under which you are working?

Contractor [ ] Consultant [ ]

2.2 Name of the organization in question 2.1 _____

2.3 Name of the project_____

2.4 Total number of employees on the project_____

2.5 Current status of the project _____

2.6 The category of the project _____

Part III Closed questions type

The following statements are related to safety practice, how it is exercised in high rise building construction. Please show the extent of your agreement or disagreement on how safety practice is exercised and on the challenges of exercising safety practice in this project site. Please use (√) symbol to indicate in the Rating or Likert scale measuring technique using Strongly Disagree **(SD)**, Disagree **(D)**, Neutral **(N)**, Agree **(A)** and Strongly Agree **(SA)**.

3.1 Perceptions on safety management arrangement on site

		Likert Scale				
code	Statements	SD	D	N	A	SA
3.1.1	Use of written safety policy at project site that complies with the national standard					
3.1.2	Communicating the safety policy to all concerned parties in the project site					
3.1.3	Following strictly site safety rules and procedures by site supervisors					
If you have any other opinion regarding safety management arrangement please specify and rate						
3.1.4						
3.1.5						

3.2 Perceptions on work place precautions and active monitoring

		LIKERT SCALE				
code		SD	D	N	A	SA
3.2.1	Providing safety orientation for new employees					
3.2.2	Providing safety training to employees regularly					
3.2.3	Providing safety personnel on site					
3.2.4	Providing First Aid Kit on site					
3.2.5	Providing first Aider on site					
3.2.6	Conducting toolbox safety meetings frequently at project site					
3.2.7	Conducting regular site safety inspections					
3.2.8	Documenting and communicating safety inspection results					
3.2.9	Providing suitable size, fit and relevant personal protective equipment (PPE)					
3.2.10	Enforcing the use of safety equipment by taking disciplinary measures					
3.2.11	Using a safe work method of statement (SWMS) that has been prepared for each activity before it commence					
3.2.12	Implementing, Monitoring and Reviewing each control measures described in the SWMS					
3.2.13	Keeping records of all accidents happened to employees					
3.2.14	Utilizing previous accident reports in preventing similar accidents					
3.2.15	Providing the appropriate and suitable tools machines and equipment's for the job					
3.2.16	Installing a rewarding system in place to promote good safety practice					
3.2.17	Encouraging workers to intervene when unsafe conditions are observed					
3.2.18	Not forcing workers to work too many hours per week on their job					
3.2.19	Allowing workers the freedom to report accidents to the concerned body					
3.2.20	Availability of emergency exit, procedure etc					

any other opinion, please specify and rate						

3.3 Insights on the challenges of exercising safety practice in this project site

		LIKERT SCALE				
		SD	D	N	A	SA
code	Statement					
3.3.1	Lack of willingness to allocate enough budget for safety					
3.3.2	Dislike to wear PPE by unskilled laborers					
3.3.3	No willingness to follow safety norms					
3.3.4	Low level of awareness on using PPE					
3.3.5	Poor safety awareness of project managers					
3.3.6	Poor inspection by the consulting firm					
3.3.7	Lack of understanding the job					
3.3.8	Workers, lack of awareness about site safety rules and regulations					
3.3.9	Unavailability of PPE					
3.3.10	Language barrier					
3.3.11	Poor inspection during provision of construction permit and follow up					

3.3.12	Poor inspection of governmental bodies					
3.3.13	Negligence					
3.3.14	High turnover					
3.3.15	It is expensive					
3.3.16	Scarcity of Time					
3.3.17	Scarcity of trained manpower					
3.3.18	To maximize profit					
3.3.19	Forcing workers to work too many hours per week on their job					
3.3.20	Under reporting of accidents to the concerned body					
If you have any other opinion, please specify and rate						

Part IV Open ended questions type

Direction: Please provide the requested information on the space provided.

4.1 Please mention the best safety practice you experienced in high rise building construction.

_____

_____

_____

_____

_____

_____

4.2 In your opinion, what are these best safety practices that domestic contractors learn from foreign?

Orforeigncontractorslearnfrom domestic?

_____

_____

_____

_____

_____

_____

_____

4.3 Please mention some major differences of domestic and foreign contractors regarding safety practice.

_____

_____

_____

_____

_____

_____

4.4 What do you suggest in order to improve the safety practice in high rise building construction?

_____

_____

_____

_____

_____

_____

Part V Mixed type questions

Direction: Choose the answer you feel appropriate and give your reasons.

5.1 How safe are high rise building construction sites in Addis Ababa?

A. Very safe B. Safe C. Relatively safe D. Unsafe E. Not sure

Pleasegiveyourreasons

_____

_____

_____

_____

5.2 From your experience, do you think that there exists difference between foreign and domestic contractors in exercising safety practice?

A. yes B. No

Please give your reasons

_____

_____

_____

_____

_____

5.3 In your opinion, which contractors exercise safety practice accordingly?

A. Foreign contractors (GC-1) B. Domestic contractors (GC-1) C. Both D. None

Pleasegiveyourreasons

_____

_____

_____

_____

Thank you for your cooperation!

B.3 Interview guide

Part VI Interview Questions Guide

1. From your experience, both domestic and foreign general one (GC-1) contractors who are currently constructing high rise buildings in Addis Ababa exercise safety practice accordingly?

2. In your opinion the contractor under whom you are working or under your supervision exercise safety practice accordingly?

3. How do you exercise safety practice in this project site?

4. Have you observed an accident occurred in this site?

5. Had an accident been occurred in this site? What was the cause/s?

6. Can you mention the Ethiopian safety rules, directives, regulations and standards that you know.

B.4 Observation Check list

SITE OBSERVATION CHECK LIST

Date……

	Statements	Yes	No	Remark
1	Safety policy posted at suitable place and readability			
2	PPEs Provision			
3	First Aid Kit, Aider on site			
4	Availability of welfare (toilet, water, sheltered room to eat rest…etc.)			
5	Availability and adequacy of warning signs			
6	Holes and edges are covered, guarded and marked			
7	Hoarding and Netting at high levels			
8	Perimeter of the site adequately protected			
9	Availability of emergency exit, emergency numbers and vehicles for emergency on site			
10	Availability suitable fire extinguisher			
11	Availability of Alarm or any other proper communication tool in case of emergency			
12	After excavation sides are supported by shoring, shielding….etc.			
13	Availability of ladders at sufficient interval			
14	Use of steel scaffolding			
15	Availability of Accident and incident log book			

Contractors Name: ……..……. Project: ……

Appendix C: List of the Projectsunder Study

C.1 List of Selected Projects

1. Zemen Bank HQ

2. United Bank HQ

3. Nib Inter.Bank HQ

4. ORDA Mixed use building

5. EPRDF HQ

6. MUBP

7. MHP

8. Addis Ababa University Forum BP

9. Enyi Hotel

10.AL-Fish HOP

11.ERCSMPBP

12 Nile Insurance HQ

13. Al-Sam plc

C.1 List and Name of the Selected Projects Contractors

1. China Wu yi co.

2. China Jiangsu Inte.corp.

3.China Jiangsu Inte.corp.

4. China Jianxi Corporation For International Economic And Technical Cooperation (Ethiopia Branch) CJICE

5.TNT construction

6. TekelebrhanAmbaye Construction

7. EwuketHailu G.C

8. Universal Construction

9. Yotek Construction

10. Enyi Construction

11. Al- Fish G.c

12. Midroc Construction

13. Rama Construction

14. Bamacon Construction

15. Sunshine Construction

C.1 List and Name of the Selected Projects Consultants

1. Wossen Architects plc

2. ETG designers and Architects

3. JADAW Consult

4. Eskinder Architects

5. Construction Management

6. S7 consult

7. Yema Architects

8. BereketTesfaye Consulting Architects & Engineers

9. Kenmos Engineering